

# The Torrance Refinery Flare System

## Designed for Safety

**F**rom outside the refinery fence, a flame burning at the top of the refinery's flare stacks can look alarming. It is not uncommon for a neighbor to worry that something is wrong when they see smoke or flames coming from the stacks or hear the rumbling noise, like far-off thunder, that occurs when the flares are in operation. Although the sight of the flares in operation may cause concern, we want to assure our neighbors that occasional flaring is a normal and vital part of keeping the refinery running safely during unplanned operational interruptions or scheduled maintenance activities.

### HOW DO THE FLARES WORK?

Basically, the flare system acts as a safety relief valve for the refinery. During normal operation, materials from the refining process are collected and routed to oil recovery tanks for further processing. There, they are converted into products such as gasoline and jet fuel. However, when the operation experiences an interruption, such as an unplanned loss of power, the system is sometimes unable to send these excess materials back to the process units for further refining. Instead, the materials are collected and routed to the refinery flare system. There, the liquid and vapors are combined with steam and burned off. This system ensures maximum combustion of hydrocarbons while minimizing emissions into the air.

### WHAT IS THAT RUMBLING NOISE?

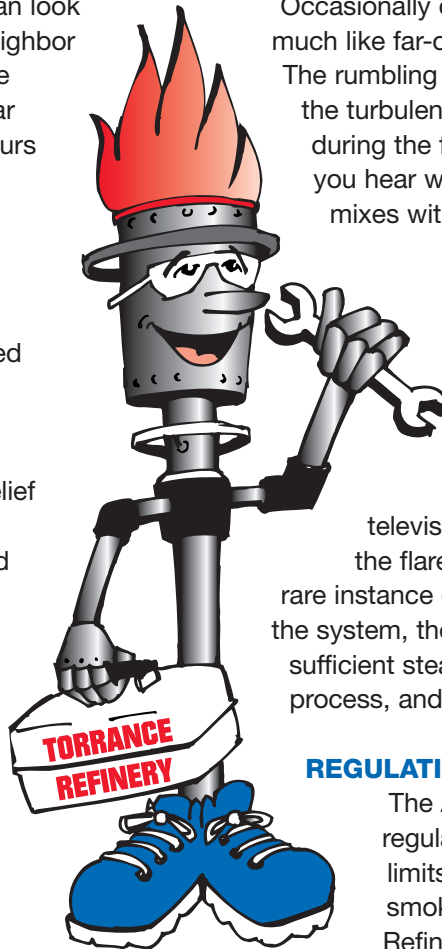
Occasionally during flare activity a rumbling sound, much like far-off thunder, resonates from the system. The rumbling that may be heard or felt is the result of the turbulent mixing of vapors, air and steam during the flaring process. It is similar to the sound you hear when you fan a campfire and the flame mixes with the added oxygen.

### WHAT IS THAT BLACK SMOKE?

Black smoke from the flare occurs when an insufficient amount of steam is available to help burn the hydrocarbons sent to the flare. Refinery personnel are constantly watching the flare system via television monitors so that steam flowing to the flares can be adjusted as needed. In the rare instance of a sudden release of hydrocarbons to the system, there may be a delay in response before sufficient steam can be supplied to the burning process, and black smoke may be emitted.

### REGULATING EMISSIONS

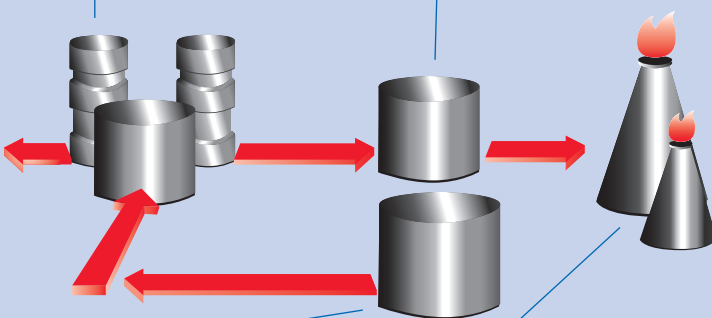
The Air Quality Management District strictly regulates emissions from the stacks and limits the density and duration of allowable smoke. In recent years, the Torrance Refinery has taken a number of steps to recover and reprocess excess materials to lessen the flaring on a day-to-day basis. However, use of the flare system is still essential to the safe operation of the refinery.



### REFINERY/FLARE PROCESS

**Process Units:**  
Process raw material into refinery products.

**Surge Drum:** Collects excess materials from process units.



**Oil Recovery:** Recovers liquids and vapors to be sent back to process units to be refined into products.

**Ground/Elevated Flares:** In the case of an operational interruption at the refinery, pressure in the surge drum becomes high enough that some excess materials are sent to the flares to be combined with steam and burned off.

### FOR MORE INFORMATION

The Torrance Refinery is committed to zero-tolerance of any negative impact to our neighbors. Neighbors are encouraged to report any concerns to our **24-Hour Neighborhood Hotline at (310) 505-3158.**

**Remember...**

**when you see the flares burning,  
be assured that their role is to  
keep the refinery running safely.**