

**Refinery Flare Reduction Initiative:** We are also an industry leader in reducing emissions from refinery flares. As part of the EPA's refinery flare enforcement initiative, we collaborated with the EPA to define a series of operating parameters to ensure flares continuously operate above 98 percent combustion efficiency. We were the first company to produce and publish the results of our own flare performance tests, setting the standard for the use of new measurement techniques and technologies to characterize and reduce emissions from industrial flares. Subsequently, we entered into an agreement with the EPA to reduce flaring emissions at our refineries.

The agreement includes provisions that memorialized the operating parameters to ensure good combustion, source reduction (preventing gases from entering the flare system) and installation of flare gas recovery systems to recover waste gas that has entered the flare system so it can be put to beneficial use as fuel gas within the refinery. Recovering these gases reduces reliance on purchased natural gas, lowering overall GHG emissions.

By the end of 2017, our flare efficiency improvements resulted in a 90 percent reduction in emissions of volatile organic compounds, an 87 percent reduction in emissions of hazardous air pollutants, and a 58 percent reduction in GHG emissions from flaring emissions compared to 2007 levels, which was the baseline year for the flare performance studies. Flare gas recovery systems are currently being installed at two additional refineries, and all are scheduled to be operational by the end of 2018, reducing GHG emissions further. In total, we will have invested more than \$375 million on projects that reduce flaring. The value of the gas streams we recover is approximately \$20 million per year.

**Recovering Off-Gases for Petrochemical Feedstocks:** Over the past several years, we implemented projects at our Garyville, Louisiana, refinery, and our Galveston Bay refinery in Texas City, Texas, to recover off-gas from multiple refinery process units. Process off-gases, which include large volumes of ethylene, ethane and heavier materials, were previously sent to fuel gas systems and used as fuel in heaters and boilers throughout the refineries. With these recent projects, the gases are now isolated and sold as petrochemical feedstock – the building blocks for plastics and other valuable products – at a premium over the equivalent cost of fuel gas. By removing these more GHG-intensive materials from the fuel gas system and replacing them with natural gas, we have reduced overall GHG emissions by over 100,000 metric tons.



**TODAY'S AGREEMENT WILL RESULT IN CLEANER AIR FOR COMMUNITIES ACROSS THE SOUTH AND MIDWEST. BY WORKING WITH EPA, MARATHON HELPED ADVANCE NEW APPROACHES THAT REDUCE AIR POLLUTION AND IMPROVE EFFICIENCY AT ITS REFINERIES AND PROVIDE THE U.S. WITH NEW KNOWLEDGE TO BRING SIMILAR IMPROVEMENTS IN AIR QUALITY TO OTHER COMMUNITIES ACROSS THE NATION."**

CYNTHIA GILES, FORMER ASSISTANT ADMINISTRATOR FOR EPA'S OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE, APRIL 2012

