Written Statement of the
National Petrochemical & Refiners Association

delivered by
Charles T. Drevna
President, NPRA

before the
United States Senate Energy & Natural Resources Committee

concerning
"The Impacts of Climate Change on the Reliability, Security, Economics, and Design of Critical Energy Infrastructure in Coastal Regions"

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Chairman Bingaman, Ranking Member Domenici, and members of the Committee, thank you for the opportunity to testify today regarding critical energy infrastructure in coastal regions.

NPRA, the National Petrochemical & Refiners Association, is a national trade association with nearly 500 members, including those who own and operate virtually all U.S. refining capacity and most U.S. petrochemical manufacturers. In addition to producing refined petroleum products such as gasoline, jet fuel, and home heating oil, our member companies provide consumers with a wide variety of products and services used daily in their homes and businesses – products used in making everything from plastics to clothing to medicine to computers.

Our member companies help keep our economy strong through the critical products they provide to American consumers, but also by providing tens of thousands of jobs across the country. The domestic refining industry currently employs more than 65,000 people[1] while supplying our nation with over 350 million gallons of motor gasoline per day, in addition to many other petroleum products.

There are currently 149 refineries operating in the United States. The total number of refineries has decreased by 50 percent over the past 25 years as smaller, less efficient refineries were closed for economic reasons. During that same time period, total refinery output has **increased by more than 25 percent.** In order to meet the growth in demand for our products, we have added the aggregate equivalent of one new world-class refinery per year for each of the last 15 years through expansion of existing facilities. Petroleum refining is the America's single largest source of energy products, supplying 39% of total U.S. energy demand and 97% of transportation fuels.[2]

Refining industry investments and reinvestments are also significant, and the domestic oil and natural gas sector's investments have actually exceeded earnings in recent years. During the period of 1992 – 2006, the oil and gas community invested $1.25 trillion dollars, compared with net income of $900 billion.[3] Many of these investments were made to expand refining capacity, and also to make our products and processes even safer, more efficient, and more environmentally friendly than they already are.

The Significance of the Gulf Coast

The Gulf Coast is America's energy heartland. According to the U.S. Energy Information Administration (EIA), the Gulf of Mexico, in 2005, produced 1.582 million barrels per day (mmb/d) of federal crude production, about ***28.5 percent of the U.S. total crude production***, and produced 10.4 billion cubic feet (bcf/d) of natural gas per day, ***19.2 percent of the nation's total natural gas production***. In addition to production, the Gulf Coast is also vital to America's

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[1] U.S. Department of Energy - Energy Efficiency and Renewable Energy. *Industrial Technologies Program – Petroleum Refining Industry of the Future*
http://www1.eere.energy.gov/industry/petroleum_refining/printable_versions/profile.html

[2] Ibid.

[3] "Investment and Other Uses of Cash Flow By The Oil Industry, 1992 – 2006,"prepared by Ernst & Young LLP for the American Petroleum Institute.

ability to receive energy imports and refine oil domestically. In 2005, ***60.4 percent of America's crude oil imports*** came through the Gulf Coast (more than 10 percent alone came in through the Louisiana Offshore Oil Port.) The region also contained 8.068 million barrels per day of refining capacity, ***47.4 percent of the nation's total refining capacity.***

Hurricanes Katrina and Rita in 2005

On August 28, 2005, Hurricane Katrina swept across the Gulf Coast with tremendous impact. More than 1,800 people lost their lives, hundreds of thousands of people were displaced from their homes, and almost three million people lost access to electricity. Katrina was followed by Hurricane Rita on September 24, which also resulted in mass evacuations and significant damage. Both hurricanes severely damaged the region's infrastructure and economy. The refining industry was not spared the effects of these hurricanes, yet we responded quickly and effectively to the dangers and challenges posed by these storms.

According to the U.S. Mineral Management Service (MMS) report of September 2, 2005, 88.53 percent of Gulf crude oil production and 72.48 percent of its natural gas production was "shut-in" or temporarily offline. Hurricane Katrina damaged offshore energy production, facilities that were critically important to receiving imported oil supplies, refineries in the affected states and beyond, and pipelines that served as major providers of refined and crude products to large parts of the country. This damage effectively temporarily removed 10 percent of the nation's gasoline supply by its impact on refining capacity.

Ten refineries constituting ***12 percent of America's total refining capacity*** (producing 2 mm/b/d) were directly affected by Hurricane Katrina and forced to temporarily suspend operations. Many other refineries, while not as badly damaged, were forced to reduce their operations as well.

The effects of Katrina were not limited to the Gulf Coast. Indeed, the widespread electricity outages caused by storm damage affected industry operations through the country. The most serious of these impacts was the temporary closure of three major pipelines:

1. The Colonial Pipeline, 5,500 miles of pipeline originating in Houston and ending in New York Harbor, which carries a daily average of 100 million gallons of gasoline, diesel and other petroleum products from refineries in the Gulf to customers in the Southeast and Eastern United States.

2. The Plantation Pipe Line, 3,100 miles of pipeline, which performs a similar function along a slightly different route, delivering a total of 620,000 barrels (26 million gallons) of refined petroleum products per day to Birmingham, Alabama; Atlanta, Georgia; Charlotte, North Carolina; and Washington, D.C., among other cities.

3. The Capline Pipeline, which carries 1.1 million b/d of crude oil to refineries in the Midwest where it is refined to produce gasoline, diesel and other petroleum products for distribution primarily in the Midwest. The effect of the closure of this pipeline was particularly dramatic,

as much of the Midwest's refineries, responsible for 16 percent of America's refining capacity, were unable to secure crude oil supplies and thus unable to function at full capacity.

All three of these pipelines were completely or partially out of service due to the disruption of electricity supplies by Hurricane Katrina. As a result, the major supply lines of refined products to the Southern and Eastern states were unavailable for shipment in whole or in part during the initial period after the storm.

The Aftermath

In spite of the serious damage these storms inflicted on the domestic refining industry, no significant, long-lived transportation fuel shortage occurred during this period. The rapid return to service of significant portions of the transportation fuels industry may be attributed to two critical factors: quick action by the federal government to temporarily waive regulatory requirements and release crude oil from the Strategic Petroleum Reserve; and the efforts of the dedicated employees of the oil and gas community, as well as their employers, who managed to return significant assets to service in a short time.

Federal authorities took several decisive actions to help relieve the many energy-related problems left in the wake of Hurricane Katrina.

SPR Release

- The Administration released 9 million barrels of crude oil from the Strategic Petroleum Reserve (SPR) to assist refiners who were short crude supplies as a result of hurricane damage. The recipients used this crude to manufacture more gasoline, diesel, jet fuel and home heating oil to supply consumers across the nation. ***This is precisely the type of event meant to trigger SPR release and demonstrated the importance of careful SPR management.***

Waivers to Increase Fuel Flexibility

- EPA provided temporary fuel waivers that made it easier to provide motor fuels to affected areas. This action pertained to both gasoline summer volatility and diesel sulfur specifications, and helped alleviate some of the supply problems in these areas by increasing the available supply of both domestic production and imports.

Jones Act Waiver

- The Department of Transportation temporarily lifted Jones Act requirements to allow non-U.S. flag vessels to transport much needed refined products from one U.S port to another.

IEA (International Energy Agency) Exchange

- IEA made available 60 million barrels of petroleum. This provided relief in the form of refined products (gasoline, diesel, jet fuel, home heating oil) which were much needed due to disrupted supplies from several refineries.

The refining industry also took several steps to recover from the shock of Hurricanes Katrina and Rita.

The safety of employees and their employees' families was the first priority. Many plants sheltered employees during the recovery process and provided supplemental housing allowances and loans to employees and their families. Indeed, many plants that were "shut-in" had employees live on-site for several weeks. The Valero Port Arthur plant housed over 1,000 of its workers while the plant was brought back online.[4]

The refining industry also temporarily expanded its workforce at affected plants, bringing in employees from unaffected plants as well as contractors. Restarting a plant is more complex and potentially dangerous than normal operations because it involves increased heat and pressure. Consequently, restarting a refinery requires additional workers to monitor and perform necessary procedures.[5] The restart process was particularly challenging for several plants because flooding ruined the electric pumps that sent crude oil throughout the refinery complex, and therefore had to be rebuilt before the plant could be restarted safely.[6]

In addition to bringing damaged plants on-line as soon as possible, the refining industry also worked to increase the output of its non-damaged plants in order to meet demand. For many plants, this meant delaying planned maintenance in order to continue production. Refineries typically perform scheduled maintenance throughout the year in order to maintain and repair their equipment, but in the wake of Hurricanes Katrina and Rita many refining plants delayed this planned maintenance so they could supplement reduced refining capacity.[7]

Hurricane Security Operations

There were numerous lessons learned by those in the industry directly or indirectly affected by the hurricanes. As one security manager said, "We hoped we were as prepared as possible, but as with any emergency, there are always going to be areas for improvement." Indeed, after Hurricane Katrina, many companies reported being better prepared for Hurricane Rita.

Following the 2005 hurricane season, NPRA published a white paper titled "Hurricane Security Operations" to synthesize and share the experiences and insights of security personnel in order to inform us and improve our preparations for the hurricane seasons to come. The paper is divided

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[4] Herrick, Thaddeus. "Restarting A Refinery Requires It To House Hundreds of Workers." *Wall Street Journal.* 11 October 2005.

[5] Ibid.

[6] Gold, Russell and Thaddeus Herrick. "Damage to Oil and Gas Facility Pushes US Closer To Energy Crisis." *Wall Street Journal.* 2 September 2005.

[7] Herrick, Thaddeus. "Refiners' Tough Call: Do Fall Maintenance Or Pump Flat-Out?" *Wall Street Journal.* 28 September 2005.

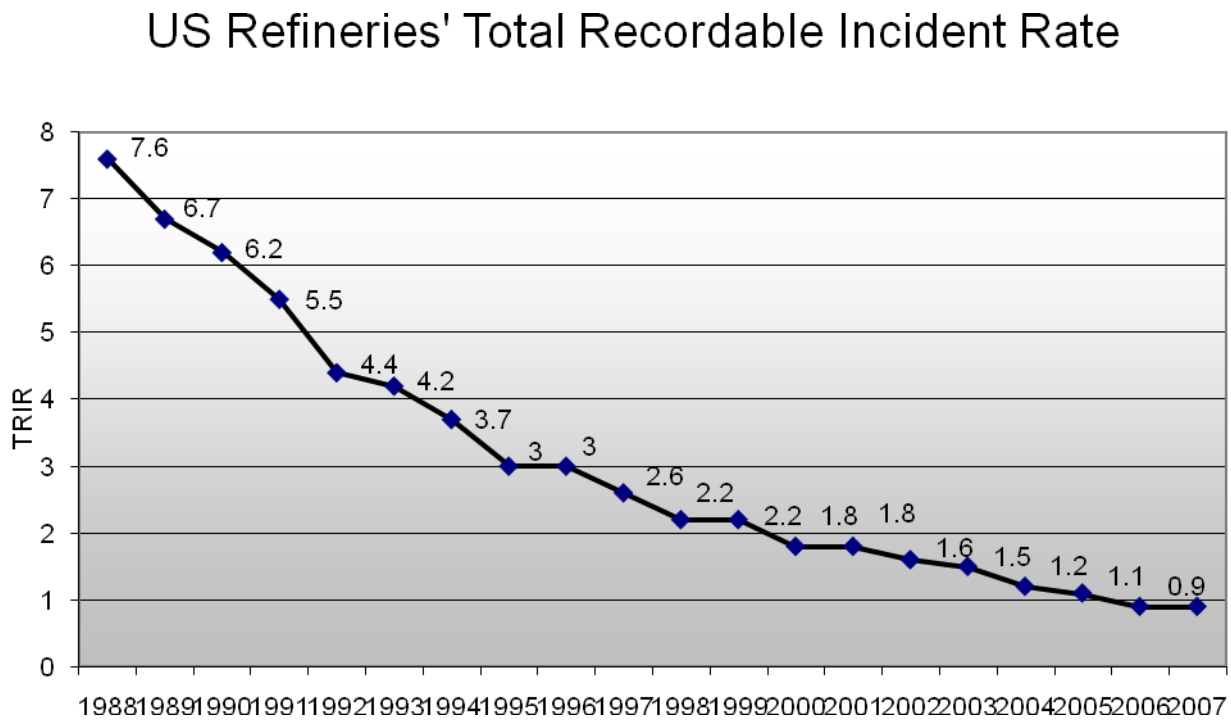
into two sections: pre-hurricane planning (which constitutes the major focus of the paper) and recovery operations.

The paper serves as a valuable crisis planning and response guide for security at refineries and petrochemical facilities in the event of a major hurricane or other natural or man-made disaster. It will be updated periodically as industry continues to learn the lessons of past crises and improve upon its already impressive ability to get facilities back on-line and operating safely.

NPRA is pleased to have made this paper available on line and free to the public on our website at http://www.npra.org/publications/general/Hurricane_Security_Operations.pdf.

Continued Safety Improvements at U.S. Refineries

U.S. refineries have made several changes in their storm preparation procedures in the wake of Hurricanes Katrina and Rita. Almost every refinery in the Gulf Coast has performed process analyses of the time it takes the facility to enact a full shutdown procedure, which tells them how long it takes to drain the tanks of inventory (to prevent leakage) or fill them with water (to ensure buoyancy and minimize damage to the tanks and surrounding equipment.) During hurricane season, the facilities monitor the projected path of the storm, the "storm arc" and react accordingly. Because projected storm paths narrow as the storm moves closer to shore, facilities have different levels of reaction depending on how far the storm is out to sea. The process is based on the idea of a trip wire – if it takes a plant 36 hours to empty its tanks of inventory and fill them with water, and if the plant is in the storm arc 36.5 hours out, shutdown procedures are enacted.



The safety record of American refineries continues to improve. The overall trend is for reduced recordable incidents and greater employee safety. NPRA's compilation of industry statistics shows that the rate of total recordable incidents has declined dramatically in the last two decades, and reached an all-time low last year.[8]

The refining industry's safety record compares favorably to other industries. According to the Department of Labor, private workplace total recordable incidents in 2006 averaged a rate of 4.4 total incidents, compared to the refining industry's 1.1 rate.[9]

Price Fluctuations

Two important factors must be kept in mind when examining the price of refined products: the cost of crude oil and competition.

The cost of crude is the single greatest driver of the petroleum product prices. In June of 2005, the U.S. Federal Trade Commission released a landmark study entitled: "Gasoline Price Changes: The Dynamic of Supply, Demand and Competition." This study determined that "worldwide supply, demand, and competition for crude oil are the most important factors in the national average price of gasoline in the U.S. and the "the world price of crude oil is the most important factor in the price of gasoline. Over the last 20 years, changes in crude oil prices have explained 85 percent of the changes in the price of gasoline in the U.S." Further, according to

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[8] *NPRA Report Of Occupational Injuries And Illnesses For The Year 2007*. Total recordable incidence rate is determined by Total Recordable Cases x 200,000 (base number of hours worked for 100 full time employees.)

[9] Department of Labor, Bureau of Labor Statistics. Workplace Injuries and Illnesses in 2006. October 16, 2007. http://www.bls.gov/iif/oshwc/osh/os/osnr0028.pdf

March 2008 EIA data, crude oil constitutes 72% of the price of a gallon of gasoline, taxes 13%, followed by refining and distribution and marketing, which both account for 8% respectively.[10]

Despite assertions that mergers have reduced competitiveness and led to an increase in fuel prices, the reality is that is that the U.S. refining industry is highly competitive. Fifty-four refining companies, hundreds of wholesale and marketing companies, and more than 165,000 retail outlets compete in the U.S. market. The largest U.S. refiner accounts for just 12% of America's refining capacity. No one company, or group of companies, sets gasoline prices. Rather, in the U.S. refining industry, the laws of supply and demand drive competitive behavior and determine pricing.

NPRA and its members understand public and congressional concern regarding high gasoline prices. This is especially the case because refiners must purchase crude and therefore are the first to feel the pinch of high oil prices. Simply put, high crude prices translate into higher costs for refiners and the American consumer.

Policymakers, however, should be cautious about taking any action that suggests that price controls are the answer to today's gasoline market conditions. The nation's ten-year experiment with government intervention into the fuel market during the seventies led to gasoline shortages and long lines at gas stations. Consumers were prohibited from purchasing gasoline on certain days of the week. That history does not suggest that price controls would be an acceptable template for congressional action.

The most effective way to maintain adequate gasoline supplies at reasonable prices is continued reliance on market mechanisms, not price regulation or other actions that interfere with and distort market realities that both refiners and consumers must face.

A recent, but very compelling example of the need to rely on continued market mechanisms was the temporary price increase during the immediate aftermath of Hurricanes Katrina and Rita. These nationwide price increases moderated consumer demand, attracted increased refined product imports, and motivated unaffected U.S. refiners to augment their production. Without the price increase, there would have been little incentive to attract increased supply, and long-lived and widespread fuel shortages may have occurred. Instead, the market acted and moderated the price of gasoline and returned retail prices to pre-storm levels by the end of November 2005.

The Federal Trade Commission investigated charges of post-Katrina "price-gouging" and found "no evidence to suggest that refiners manipulated prices through any of these [illegal] means." Instead, it found that "refiners responded to market prices by trying to produce as much higher-valued products as possible, taking into account crude oil costs and physical characteristics." Although the prices increases might have been surprising and painful to many, they were a natural consequence of the widespread effects of Hurricane Katrina and helped mitigate demand in a supply-short environment.

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[10] EIA's "Gasoline and Diesel Fuel Update," March 2008, http://tonto.eia.gov/oog/info/gdu/gasdiesel.asp

The charge of "price-gouging" is not new to the refining industry. Dozens of investigations have been launched at the state and Federal levels and in each instance the industry has been cleared of charges of "price-gouging." Then, as now, allegations of price-fixing, price-gouging or other illegal practices are false.

Current State of the Domestic Refining Industry

149 refineries are currently operating in the United States. These refineries, located in 33 states, have a combined capacity of over 17.4 million barrels per day (b/d).[11] Although a new, "green-field" refinery has not been built in the United States since 1976, America's operable refining capacity continues to expand. While there are several factors that contribute to the lack of new refineries — enormous capital costs, rising commodity costs, environmental regulations, and sustained community resistance — America's refining capability continues to grow. The domestic refining industry has increased capacity over the past thirteen years. U.S. refining capacity on January 1, 1994 stood at 15.0 million b/d and at 17.4 million b/d on January 1, 2007. This increase of 2.4 million b/d represents an aggregate growth of 16 percent or, in simpler terms, ***the addition of a large-scale (185,000 b/d) refinery each year***.[12]

The Congressional Research Service reports that domestic refining margins in 2007 declined versus 2006 with several independent refiners experiencing significant losses in the fourth quarter of 2007. "New capacity investments in refineries, one possible source of gasoline price relief for consumers, are likely to be slowed by the poor profit performance of the refining sector. If new capacity does not come on line the need for imported gasoline will remain a key factor in avoiding shortages in the U.S. market."[13]

Recommended Policy Actions

The refining industry continues to evolve, and we will strive to face these complex challenges. Yet we need the help of Congress to do so. By implementing sensible, strategic policies, Congress can help guarantee America a secure, reliable and predictable supply of energy. Necessary and prudent actions include the following:

Increase supplies of domestic oil and gas resources.

- Refineries and other important onshore facilities have been welcome in limited areas throughout the country, including the Gulf Coast. However, policymakers have restricted access to much-needed offshore oil and natural gas supplies in the eastern Gulf and off the shores of California and the East Coast. Congress should permit oil production in ANWR.

- These areas must follow the example of Louisiana and many other states in sharing their energy resources with the rest of the nation. In light of the concerns regarding the

[11] EIA, July 2007.
[12] EIA: the size of an average U.S. refinery on 1/1/07 was 117,000 b/d.
[13] Congressional Research Service. "Oil Industry Profit Review 2007," RL34437, April 4, 2008, p. CRS-8.

concentration of energy producing complexes along the Gulf Coast, it is becoming increasingly clear that we need to diversify our energy sources. By doing so we ensure steady access to our own natural resources, and also reduce our dependence on foreign imports.

- Simply put, this additional supply is sorely needed.

Repeal of the renewable fuels mandate.

- here are serious questions whether to continue a mandate for increasing amounts of corn ethanol and biodiesel in the midst of a global food crisis.
- Recent studies have explained the negative impacts biofuels mandates are having on the environment
- USDA projects that corn production in 2008 will be 7.3% below the record level in 2007, while domestic ethanol plants will use 33% of this year's corn harvest. This "will keep the price of corn in record territory into 2009."[14] This will also contribute to higher costs for ethanol-blended gasoline.

Congress should suspend the tariff on imported ethanol.

- Given the significant strain on our nation's fuel supply system associated with the dramatically increased ethanol mandate, Congress should suspend the tariff on imported ethanol in order to maximize the supply of renewable fuels. This is not a new position for NPRA; NPRA advocated this position in testimony before the Senate Commerce, Science, and Transportation Committee in May 2006, before the Senate Energy and Natural Resources Committee in February, and before the House Energy and Commerce Committee last week. Removing the tariff is critical to providing refiners more flexibility that will be desperately needed to comply with the newly expanded ethanol mandate.

Congress should preempt state biofuels mandates.

- The present enthusiasm for renewable fuels has resulted in several states and even municipalities adopting local mandates. Local mandates will impose additional strain on the ethanol distribution system and increase costs for shipping and storage.

- The existing federal renewable fuels standard mandate with its credit-trading provisions contains a degree of freedom that allows the distribution system to operate at a low-cost optimum by avoiding infrastructure bottlenecks (such as lack of storage or rail capacity). Mandating biodiesel usage in specific areas forces a distribution pattern that is less flexible, and therefore has less capability to minimize costs.

- Further, these mandates create boutique markets requiring special fuel formulations and transportation logistics, thereby balkanizing the national fuel market. If Congress wishes to allow for as diverse a supply of alternative fuels as possible, and to promote as much

[14] Kilman, Scott. "U.S. Corn Production Seen Dropping, Though More to be Used for Ethanol" *Wall Street Journal* 10 May 2008.

flexibility in the system as possible, state and local biofuels mandates should be preempted.

Resist tinkering with market forces, including imposition of "windfall profits" taxes, LIFO repeal or elimination of foreign tax provisions.

- Market interference that may initially be politically popular leads to market inefficiencies and unnecessary costs. Policymakers must resist turning the clock backwards to the failed policies of the past.

Experience with price constraints and allocation controls in the 1970s demonstrates the failure of price regulation, which adversely impacted both fuel supply and consumer cost. The state of Hawaii cancelled its less than one-year old gasoline price regulation because it led to higher prices and supply uncertainty. A windfall profits tax would discourage investment in refineries, which is needed to expand domestic production capacity and produce cleaner fuels. Such a tax would also place domestic upstream producers at a further disadvantage to state-owned oil companies, resulting in more, not less imports of foreign supplies. A recent Congressional Research Service report states that "[t]he combination of high crude oil prices that raised [independent refiners' and marketers'] costs and the inability to quickly pass cost increases on to consumers lowered refining margins, resulting in generally declining profits" in 2007.[15]

Review permitting procedures for new refinery construction and refinery capacity additions.

- Seek ways to encourage state authorities to recognize the national interest in increased domestic refining capacity by reducing the time needed to permit expansions and other refinery projects.

Conclusion

NPRA, its members, and the entire oil and gas community are dedicated to working cooperatively at all levels to ensure an adequate supply of clean, reliable and affordable petroleum products for America. We stand ready and willing to work with Congress, and are committed to serving American consumers. I appreciate this opportunity to testify today and welcome your questions.

[15] Congressional Research Service. RL34437, "Oil Profit Industry Review 2007," April 4, 2008, summary