

## **EXCERPTS FROM TECHNICAL EXHIBIT FOR PUBLIC HEARING**

### *Excerpt 1*

This Exhibit has been prepared by Marcia Elder based upon her expertise in the energy, planning and regulatory fields, with related safety experience, as established in Attachments B and C to Exhibit I.

### **I. Energy Facility Safety**

Safety is a matter of serious concern for the general well-being of the public and a responsibility of industries whose operations and products pose safety risks.

Conventional energy facilities (fossil fuels, nuclear power and hydropower) are a form of industry typically accompanied by high risk. Specific risks vary depending upon the type of energy involved. They range from the mining end of the spectrum (such as coal miner safety), to processing facilities (such as gas extraction), to fuel transportation (via highways, rail, ship and pipelines), to storage and distribution facilities (such as petroleum products in liquid and gas form), to power plants (with concerns of worker safety and environmental pollution), to facility infrastructure and maintenance (hydropower and others) to spent fuel storage and transportation (in the case of nuclear power).

Because of the dangers involved -- explosions, fires, inhalation of damaging fumes, pollution of environmental resources, mechanical force, exposure to radiation, excessive noise and others -- such facilities are generally located away from areas where people live, work and travel.

### *Excerpt 2:*

Major points of concern with LP gas storage and distribution operations include:

#### **Facility Location**

Energy facilities -- including LP gas -- are located away from where people live and work given their inherent safety risks. Zoning and other local land use regulations establish land use districts to define appropriate locations for industrial and other land uses (residential, commercial, agricultural and other). Energy facilities are industrial by nature and addressed accordingly in land use plans and codes.

#### **Facility Design**

Within an energy facility, the placement of what goes where is vitally important. For instance, with appropriate policies in place bulk storage tanks for LP gas must be located a certain distance from each other (and from other facilities, roads, etc.) for safety purposes. Also for safety, they may not be located under electric utility lines and they must be a safe distance away from portable tanks stored at the site, if any. The Site Plan lays out what must go where before any development occurs, including tanks, storage buildings, truck access areas, electric stations and lines, loading and unloading areas, parking, fencing, lighting and other elements of the ultimate facility. *As noted earlier, the Site Plan requirement has just been removed in Florida.*

#### **Equipment & Vehicles**

Requirements for the design, manufacture, testing and handling of tanks, other storage containers, trucks and associated components are aimed at ensuring that equipment sold to industrial customers is safe for the short and longer-term, and that trucks transporting such equipment as well as fuel are likewise safe for employees and the traveling public while delivering tanks and equipment without damage that could compromise safety. Regulations also apply to construction and installation approaches and practices.

## Operator Qualifications

Given the safety risks involved, special training and knowledge are required of those involved in the transport, storage and handling of LP gas – in order for workers and the public to be safe. Assigned duties should also be made in consideration of job experience, with administrative oversight provided. Some duties require more than one worker at a time for safe execution.

## Operational Practices

The adoption of regulations does not guarantee their proper implementation. It is imperative for safety purposes that operational activities be supervised and that other administrative oversight be effectively provided. **When the risk of explosions and fires exists, as with the handling of LP gas, following the letter of the law is crucial. Human error can lead to severe consequences -- and has** (as addressed in Part IV below).

## Transportation Safety

In addition to operations at bulk storage and distribution plants as well as other LP gas facilities, the transporting of liquefied petroleum gas requires careful attention to safety. Governmental requirements and industry-designed best practices address known points of vulnerability. Some are within the direct control of truck drivers and transportation personnel. Others are not, such as accidents on the road and security issues.

## Security

Unfortunate but true, energy facilities – and vehicles carrying energy supplies – are subject to vandalism, theft and terrorism. As such they require special protections for safety purposes.

## Fire Control & Water Access

LP gas is highly flammable and the risk of explosions and fires exists with bulk storage and distribution plants as well as fuel-loaded trucks. **Effectively combating such fires requires trained and skilled fire department personnel (in appropriate numbers), the necessary fire trucks and equipment, and ready access to an adequate, sustained water supply.** Fire trucks with self-contained water are limited in their capacity to stamp out a fast spreading fire. Access to public water supply and/or water bodies in the immediate area (if trucks are equipped to quickly extract water) can make the difference between life and death. *Data on water requirements appears later in this report.*

## External Events

Weather events are the most obvious in this category. Hurricanes, tropical storms and tornadoes are of greatest relevance in Florida. Storage tanks can be undermined due to extreme rain and wind, portable tanks can become projectiles in heavy winds, loaded distribution trucks can suffer damage from flying debris and other wind, water and lightning related damage can occur.

A fire originating elsewhere (not within the facility site) can quickly amplify in significance if it spreads to an industrial energy facility where it can result in breached fuel tanks. Heat applied to an LP gas tank, whether a bulk tank or much smaller storage container, results in internal pressure that can lead to an explosion and fire.

A fuel storage tank located close to a highway poses a threat given the fact that things happen fast in highway accidents and a vehicle out of control could quickly leave the road, spin out of control and slam into such a tank, resulting in container breach, explosion and fire.

Smoking in the vicinity of propane tanks – whether of bulk storage size or small containers – can lead to a fire if an unknown leak has occurred or if fuel from tanks has been bled off for cleaning, transportation or other purposes and accumulates at ground level.

Unintentional damage due to gunfire is another example, where most people are unaware that a bullet can travel as far as a mile once fired. Intentional damage can be a threat as well, as motivated by a prank or an intent to do harm.

### **Special Considerations**

Two examples in this category include flooding and portable tanks.

#### Flooding

As noted by the Propane Education & Research Council: “Responding to a gas leak during average conditions is one thing, but responding during a flood or in the aftermath of a hurricane can bring an entirely different set of variables”. Further details from their November 2012 report are here: <https://www.iafc.org/topics-and-tools/resources/resource/propane-and-gas-safety-in-flooding-conditions-emr-isac-infogram-november-2012>.

#### Portable Tanks

Because heat applied to the outside of the tank can produce pressure buildup within, and excess pressure can result in an explosion, such tanks are recommended to be painted with reflective paint (silver or light colors) rather than paint that absorbs heat (dark colors).

### **Policy Realities**

As a final note, while the presence of regulations is intended to foster public safety and safety of energy workers, not all regulations are adequate to achieve this goal. Special interests and political influence also play a role that can weaken, eliminate or inappropriately orient regulations.

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