

## **Safety concerns contained within the ATCO Draft Decision to limit or exclude greenfields connections**

Dear Robert and Tyson

In response to the Economic Regulation Authority's Draft Decision on ATCO's Access Arrangement Submission ("Draft Decision"), dated 14 October 2014, *EnergySafety* seeks this opportunity to share significant safety concerns that may arise from the restriction imposed on ATCO disallowing it to expand its network on economic grounds. Furthermore, as residential areas develop, shopping centres and other public buildings such as hospitals will appear. If gas is not reticulated then these facilities could also be denied gas as a primary fuel for cleaning, cooking and possible future power generation.

I refer to the Draft Decision para 458 to 483 where the EMCa estimates preclude greenfield works. Commenting from a technical safety regulatory point of view, *EnergySafety* does not agree with this stance and foresees a number of safety issues. The purpose of this email is to inform the ERA of the safety risks associated with these aspects of the Draft Decision.

The Authority's decision would preclude approximately 90,000 potential customers the opportunity to exploit the benefits of a natural gas mains connection and the safety such connections provide in comparison to bottled gas supplies over the course of AA4. From current greenfield experience well over 90% of greenfield residents request a gas connection. If reticulated natural gas is not available, it is anticipated that 80% of these households may then instead pursue bottled LPG. In other words, this means that about 72,000 households will have two 45 kg cylinders of gas strapped to the outside of the house. This equates to approximately 144,000 cylinders concentrated in new suburban areas of Perth over the course of the next five years alone. There are a number of safety concerns that this office believes should also be carefully considered and these may counter any economic benefit mentioned in the Draft Decision.

In essence, a strict interpretation of the current regulations that are mostly based on AS/NZS1596:2014 The storage and Handling of LPGas and AS/NZS5601.1:2013 Gas Installations would permit such installation methodology as an alternative to reticulated natural gas. However these standards consider typical risks (hazard and frequency). During their conception, it would never have been envisaged that such extensive cylinder usage was to occur at such intensity and/or in densely populated areas. To detail these concerns further *EnergySafety* provides the following information:

### **Bottled LPGas outside**

Bottled LPGas and its associated logistics chain have a number of inherent dangers when compared to in-ground reticulated natural gas connections. These include, but not limited to:

- The urban sprawl continues to expand in Perth, however the size of blocks are getting smaller (typically 250 – 450 m<sup>2</sup>) as evidenced in the recent subdivisions in the vicinities of Secret Harbour, Baldivis and Quinns Rocks. Frontages often include stairs in lieu of driveways and this alone raises questionable LPG delivery, installation and access practises.
- Delivery access is often located in the rear of the property in narrow alley ways with short or non-existent driveways. If indeed delivery vehicles could transverse these alley ways, they would inevitably block ingress and egress to other residences during the course of the delivery/changeover.

- There will be large amounts of volatile fuel gas concentrated in the new subdivisions (144,000 x 45 kg = 6480 tonnes). Testing conducted by this office has proven that individual LPG cylinders are robust in the upright position even during the most significant fire events. However in large house fires, the LPG cylinders often topple. In the horizontal position, the cylinders are very susceptible to failure resulting in potentially catastrophic damage to life and property.
- The small blocks also provide an increased opportunity for fires to cross boundaries to nearby properties. Bottled LPGas increases the fuel load and in certain circumstances the cylinder(s) that have toppled or suffer from flame impingement can produce a Boiling Liquid Expanding Vapour Explosion (BLEVE). Therefore, the vapour cloud explosion (fireball) that follows a BLEVE puts adjacent properties in jeopardy with the potential to create destructive chain reactions.
- Natural Gas has centralised sources of odorant that are continuously in operation, monitored regularly and are therefore considered to be the most reliable form of providing odorised gas.

#### **LPGas inside the house**

Once LPGas is piped inside the premises it is more problematic than Natural Gas for the following reasons:

- Natural Gas has a tendency to rise up and escape through cracks and crevices once it reaches the upper areas of an enclosed space. The opportunity for ignition is vastly reduced compared with LPGas which is heavier than air.
- LPGas is easier to ignite, the lower flammability limit is half that of natural gas based on volumetric considerations.
- LPGas is heavier than air and is known to pool inside houses in closed spaces such as lounge rooms, laundries and other living areas. The gas continues to pool in some case until an ignition source is found (electric motor/fan, power point, etc) with possible destructive consequences. Pooling may also in some instances lead to a delayed detection of smell by the occupants. Natural gas is lighter than air, therefore more readily detected by smell and dissipates quickly in enclosed spaces such as rooms, awnings and roof spaces.

Bottled LPG supplies work well in rural areas of Western Australia and in rural areas around the country. Rural house frontages are much wider, the dwellings are scattered and do not share common walls, easements and driveways as is the new norm in Perth subdivisions. Driveways are much longer and wider allowing access for large delivery vehicles. LPG cylinders can be installed on to properties in open aired-locations with no danger of an explosion causing damage to other dwellings or injuring other residents.

The current Perth natural gas distribution system is regulated under a Safety Case regime aligned with current legislation, Australian Standards and world's best practise providing a much safer and economically viable system in societal terms.

If you wish to discuss these matters further please contact me.

Regards,

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