**Gas Sensor**

**Requirements Specification**

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**Functional Requirements Document**

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# Background

Safety is the number one concern when it comes to gas lines. That’s why it is important to be able to monitor potential gas leaks that could cause property destruction or endanger human safety.

# Objective

Natural Gas (methane) leaks from home appliances and hidden gas lines present dangerous and potentially deadly environments to the inhabitants of the home. The objective of the project is to create a device that turns off the flow of Natural Gas to the home when a leak is detected.

# Need Statement

* Over and over a problem plays out with aged humans. This problem is the inability to remember how to do many simple tasks. One of these forgotten tasks is shutting off the natural gas on their range or oven. A sensor and automatic valve control is necessary to compensate for their incontinence. Depend on it.

# Engineering Requirements

Below are individual requirements by category for the system:

## 

## Functionality

* + The device should be able to detect gas concentration of 200-10000 ppm
  + The device must be able to actuate a mosfet dc relay
  + The device may be able to communicate wirelessly
  + Upon detecting gas the device should be able to send an active high signal to a microcontroller

## Performance

* + Performance will be determined by components used. No specific performance requirement will be required.

## Economic

* + Price is to be determined by available electronic modules and current market prices

## Energy

* + Device may operate at 5vdc

## Environmental

* + This is the responsibility of Comnox and not the capstone group.

## Health and Safety

* + This is the responsibility of Comnox and not the capstone group.

## Legal

* + This is the responsibility of Comnox and not the capstone group.

## Maintainability

* + The device should operate without any maintenance or service

## Manufacturability

* + The product should be fully modularized using sub-contractors.

## Operational

* + The device should be plug and play, plus a reset (and test button?)

## Political

* + You bet! Changing existing laws to mandate the use of this device, or generating large contracts with many gas supply companies to do essentially the same thing as shifting the laws, will define the financial viability of this product. (this is likely the only routes to bringing this device into the realm of financial success) This is the responsibility of Comnox and not the capstone group.