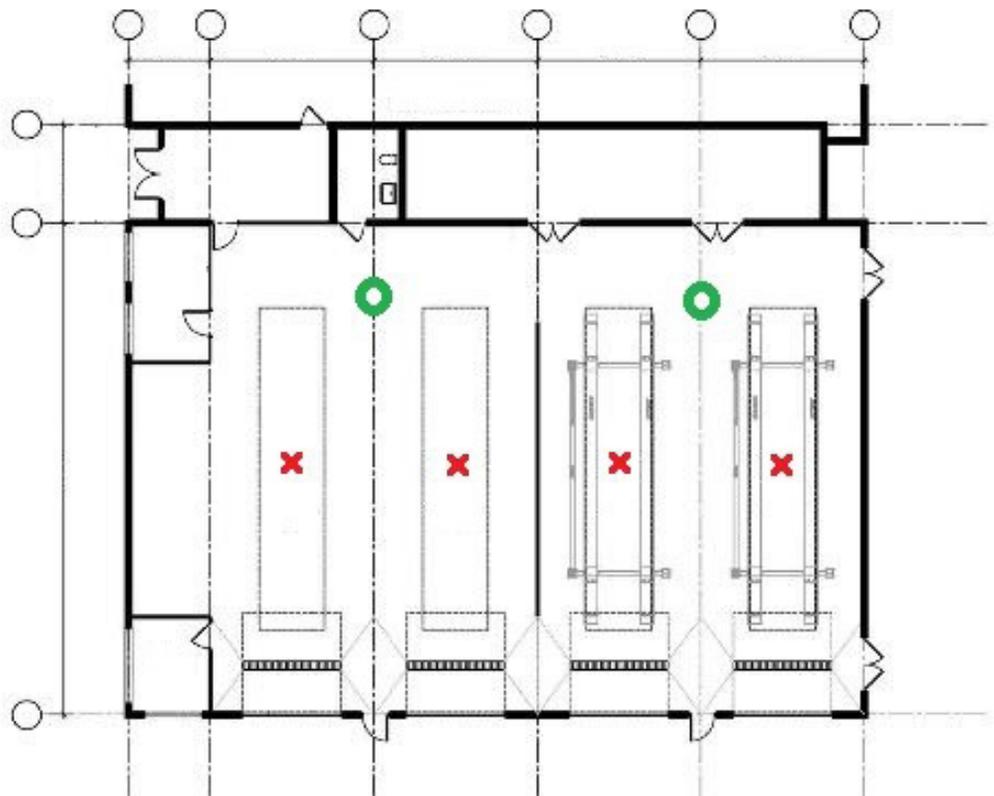


BEST PRACTICES GAS DETECTOR PLACEMENT

Natural gas and hydrogen garages may be required to install gas detection systems to protect the facility and monitor for a gas releases or leaks. Garages that carry out major repair services (engine or fuel cell work, painting, body and fender work, welding, and repairs that require draining of the motor vehicle fuel tank) are typically required by code to have a gas detection and alarm system that will alert occupants of the garage with audio and visual signals.

Both natural gas and hydrogen tend to rise to the highest point in ceiling, even if disturbed by air currents or other obstacles. Gas sensors should be placed near the high point of the ceiling, above a service bay where gaseous fueled vehicles are serviced, in a location that is in the line of ventilation or air flow to optimize detection. They should be placed away from corners or walls, so that gas can easily be sampled. A review of the manufacturer's recommended detection area of influence, combined with considering the ceiling, will optimize placement.

The up-front cost of such a system will rely in part on the number of gas detectors, and on-going maintenance costs should be considered. Careful consideration during the specification of the location of individual gas detectors will keep these costs to a minimum. Neither NFPA 30A, NFPA 2, nor IFC specify exactly where gas detectors should be located within a facility.



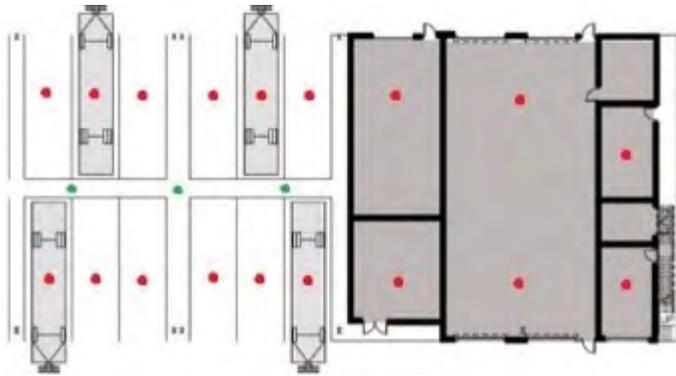
It is wise to place detectors above but in between individual vehicle service areas, or in between rows of service areas in larger garages. This will avoid placement next to walls or in corners, but still places sensors approximately above the vehicles while they are in the service area, right in the potential path of migration.

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BEST PRACTICES

GAS DETECTOR PLACEMENT

Placing detectors **in between individual service areas** allows one detector to protect two service areas, reducing the number of detectors by half, and therefore reducing cost. Placing one detector **in the aisle between four individual service areas** reduces the number of detectors by four.



This placement also allows for continued cost savings on reduced maintenance. With this configuration, the sensors can be maintained and calibrated without moving or interrupting vehicle service because ladders, scissor lifts, and other means of access can fit in between service areas without relocating vehicles. In addition, the number of gas detectors may be further reduced in adjacent office areas if properly sealing doors are installed, or if positive pressure is used to ensure no gas can enter the area.

When developing a facility that includes methane detectors, the OEM design recommendations should always be reviewed with the OEM technical staff.

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