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Air Resources Board

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Testimony detailed content by Elias Tobias, P.Eng. Safety Scan USA (safetyscan.org) on behalf of EDF (environmental defence fund)

- Safety Scan specializes in Gas Leak Detection using state of the art infrared optical gas imaging (OGI). Quantification using hi-flow sampler technology. Emissions management program support for LDAR programs and GHG emissions reporting deployed on an encrypted cloud based system
- There was a study made by Colorado State University and Carnegie Mellon University found out recently that Natural Gas facilities in the US alone lose about 100 billion cubic feet of gas every year. That is 8x the estimates that the EPA uses. Big leakers
 - Compressor Stations (transmission and storage). (Fugitive) 22%
 - Underground pipelines. (Fugitive) 16%
 - Vented accounts for 30%
 - Total just here 68%
 - Facilities inspected = 4,549
- Although OGI costs more per hour because we can inspect a facility usually 20x to 100x faster than the traditional method 21 most of the time. At the end of the day our services will cost less. This sometimes is a paradigm that needs some work. As an

example for a private underground natural gas storage facility in northern California (we visited most after the emergency proclamation was signed by governor Brown) our inspection will take between 1/2 h to 4 h on a starting rate of \$265. At the end of the day our inspection will probably cost less than the regular old method 21

- OGI can be extremely helpful in detecting gas leaks at an early stage. Methane for example has a detection limit at 3 gr / h or 0.1oz / h. Imagine a regular cigarette lighter gas flow, this technology will detect that level of leak at a proper distance
- OGI makes the leak visible to the human eye producing an undeniable proof from a safe distance with encrypted GPS and date stamp
- We can deploy our OGI camera from the ground, helicopter, airplane or a military / industrial grade drone if necessary
- Porter Ranch leak videos from almost 3 miles showed the seriousness of that event and we have produced over 20 optical gas imaging videos with very "dramatic" imaging for our own scientific study purposes
- And because gas leaks are unpredictable we support the removal of the ARB step down rule
- There is also a recent very modern technology that uses spectral imaging based on the combination of an infrared spectrometer with a single element detector and a scanner system that can qualify and quantify over 400 types of compounds (methane included).
- Qualify = it can tell what gases are leaking, and the system will identify all of them

- Quantification = with the proper ground installation the gas leak plums information can provide that quantity of gases leaked into the atmosphere. The technology available can be deployed from 2 km or 1.25 miles away from the leak
- Quantification from an airborne helicopter is know to be in development at the present moment
- Many of the technologies presented here can be automated on a 24/7 option connected to a control room and/or scada for automatic alarms as soon as the leaks reach the detection limits that can sometimes be adjusted

For and example if we were to deploy this new technology while the Aliso Canyon leak was happening we could have identified all the compounds that were being emitted into the atmosphere and also had a very strong chance to scientifically quantify the concentration of all gases being leaked into the atmosphere on a 24/7 real time monitoring with spectral images videos as a proof

Sincerely,

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