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NiSource Hydrogen Pilot

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Columbia Gas[®]

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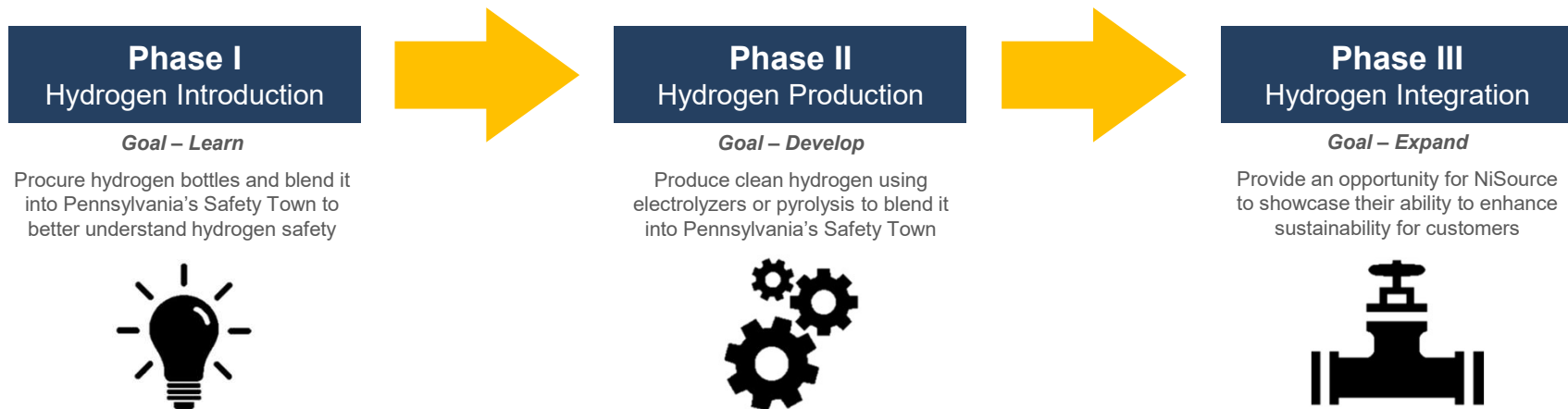
6-State Footprint
~7,500 Employees
~3.4M Natural Gas Utility Customers
~500K Electric Utility Customers
~\$30B, 20+ Year Infrastructure
Enhancement Plan

★ CORPORATE
HEADQUARTERS

● STATE UTILITY
HEADQUARTERS

NiSource Hydrogen Pilot

Our Hydrogen Pilot is planned to be accomplished in a phased approach where each phase has a distinct learning outcome to prepare NiSource for continuation into the next phase



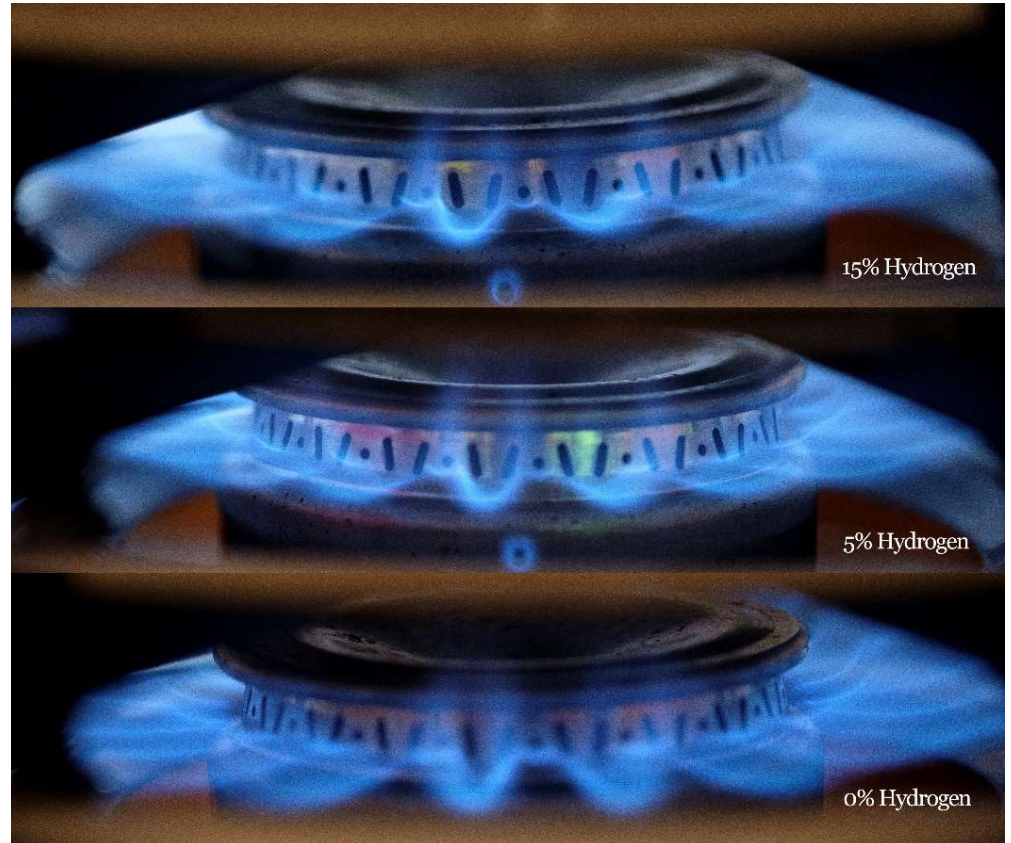
Phase I began in 2022 and will continue through 2023
Phase II or III could follow in later years depending on the results of Phase I

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Phase I – Customer Experience

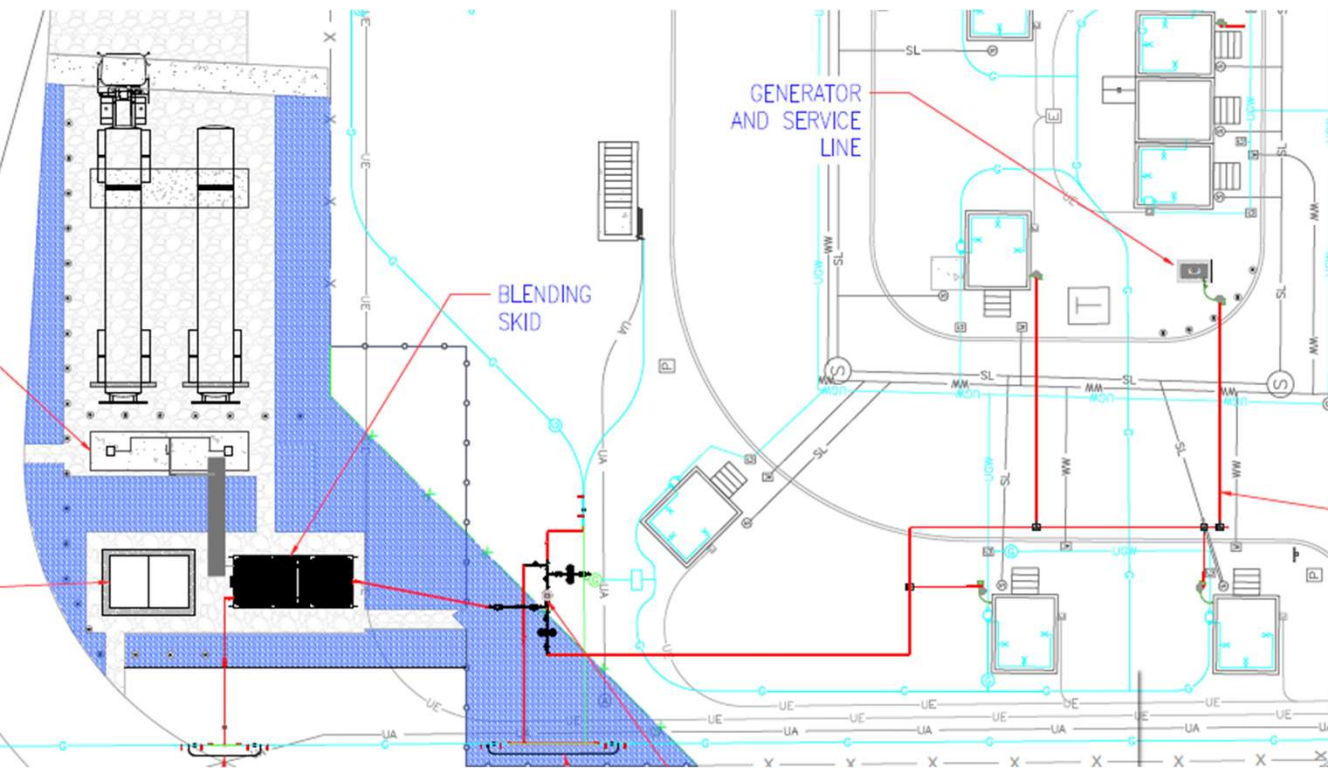
- Focused on what an average customer would see and experience
- Appliances evaluated includes a range, a gas dryer, and a gas furnace.
- Conducted using pre-blended tanks of hydrogen and natural gas with four hydrogen blends (2%, 5%, 10% & 15%)
- Indicated no noticeable difference up to a 15% hydrogen blend



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Phase I – Hydrogen Blending Next Steps



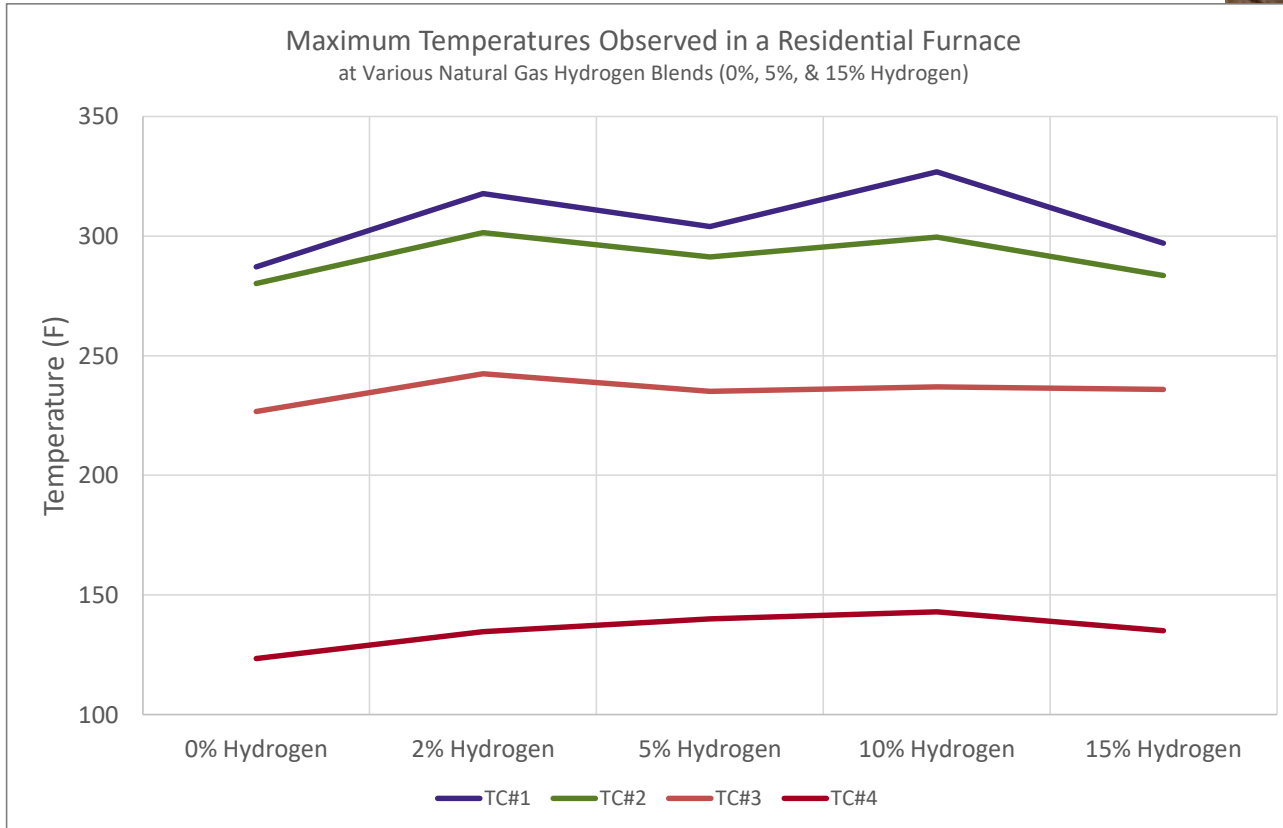
- Installation of blending system into our Safety Town
- Enables blending from 0% - 20% hydrogen
- We can conduct extensive field trials of various hydrogen blends
- Working with GTI and other partners to verify gas distribution equipment performance with hydrogen blends

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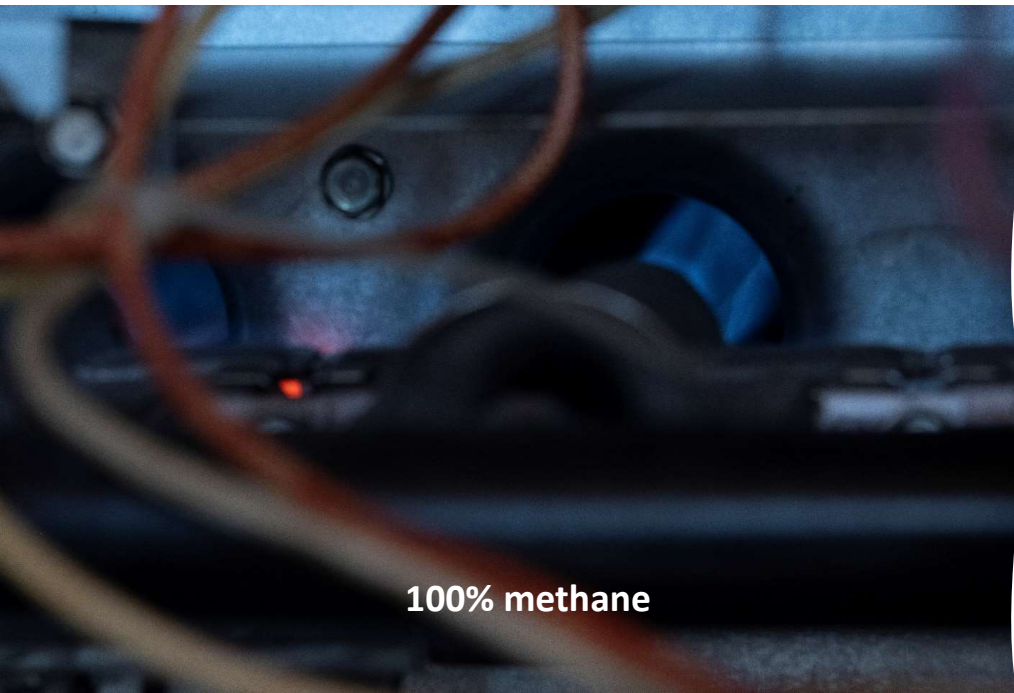
Natural Gas & Hydrogen Blending – Gas Furnace

Practical Residential Impact Exploratory Demonstrations

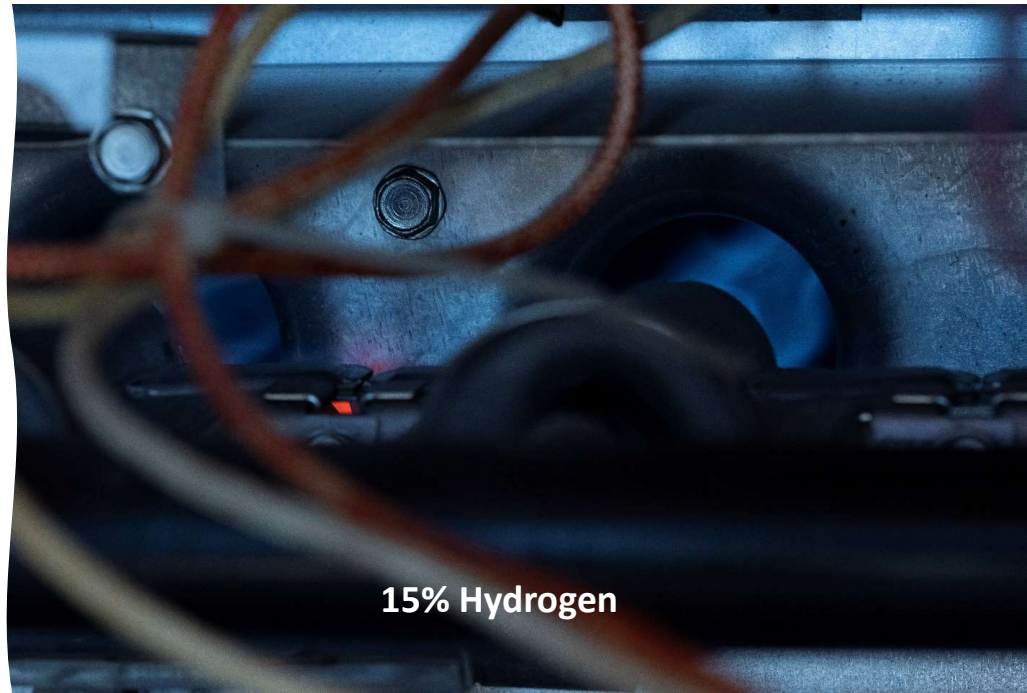


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100% methane



15% Hydrogen

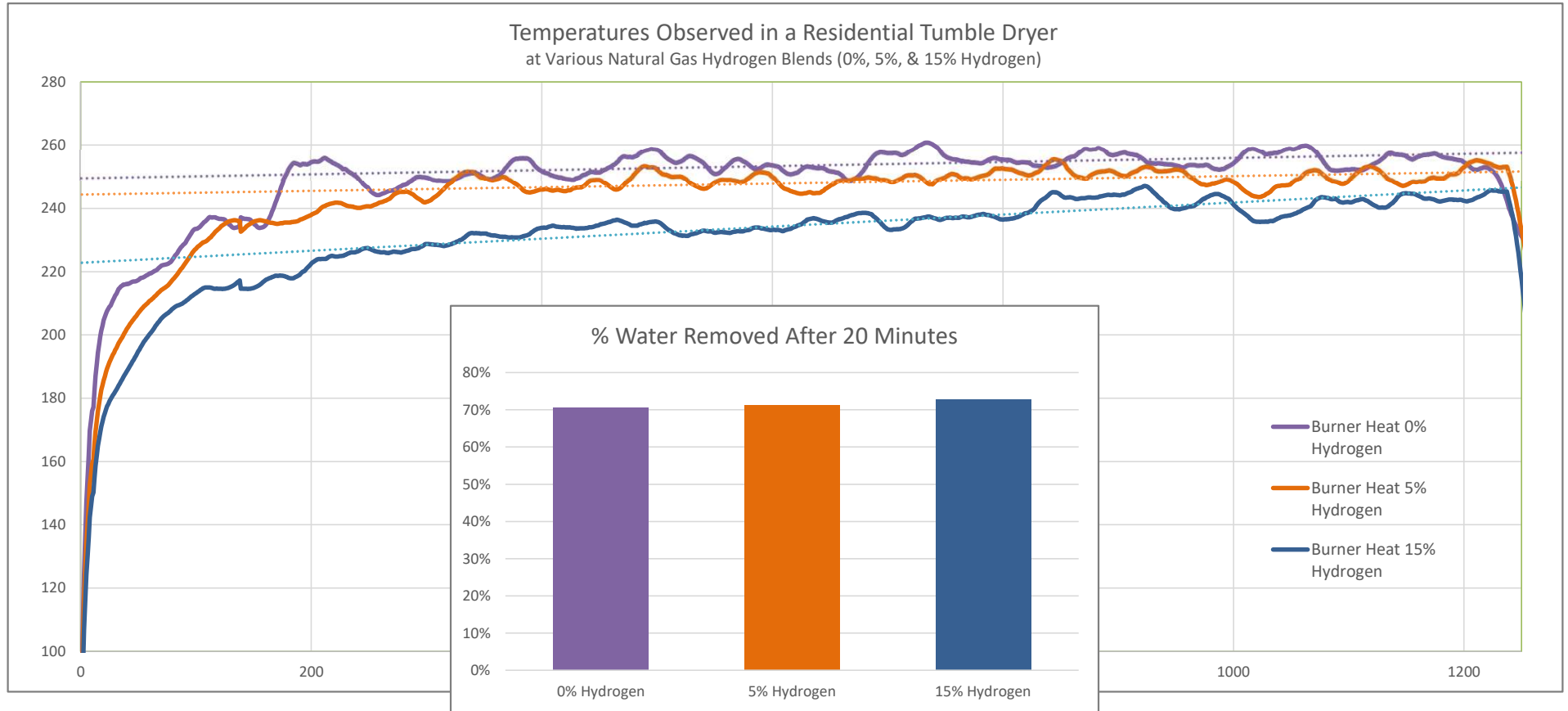
- Furnace test were performed first, moving from 100% methane and progressing from 2% hydrogen to 15% hydrogen
- At 10% and 15% hydrogen, the sound of the furnace changed. No “roar” of the gas burning, a high-pitched whine was noticed by some

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Natural Gas & Hydrogen Blending – Gas Dryer

Practical Residential Impact Exploratory Demonstrations



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Hydrogen Blending - Range



100% methane
(Photo taken ~8:30am)

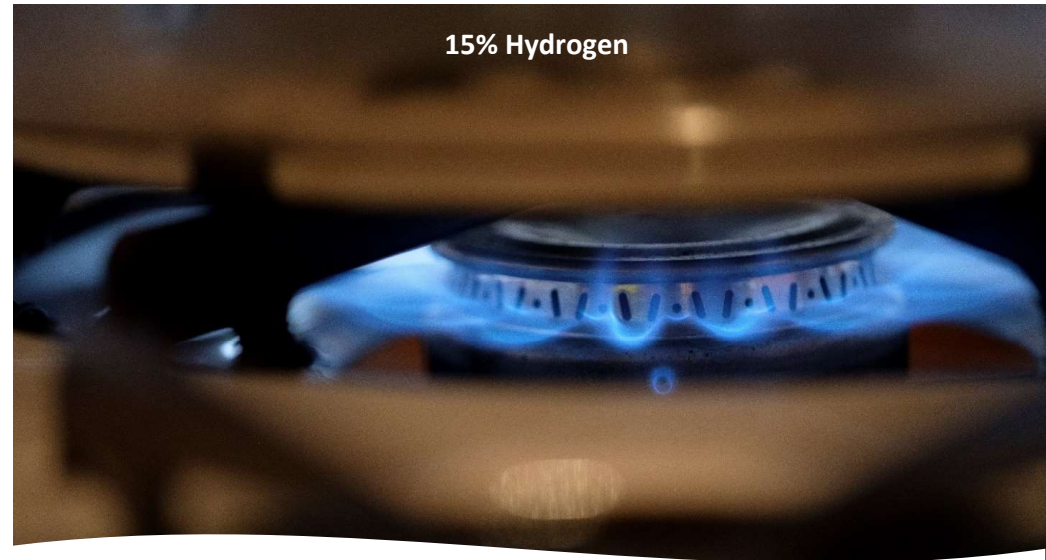


15% Hydrogen & 85% methane
(Photo taken ~10:30am)

- **At 15% hydrogen the color of the flame was notably lighter in color and was hard to see in a well-lit room**

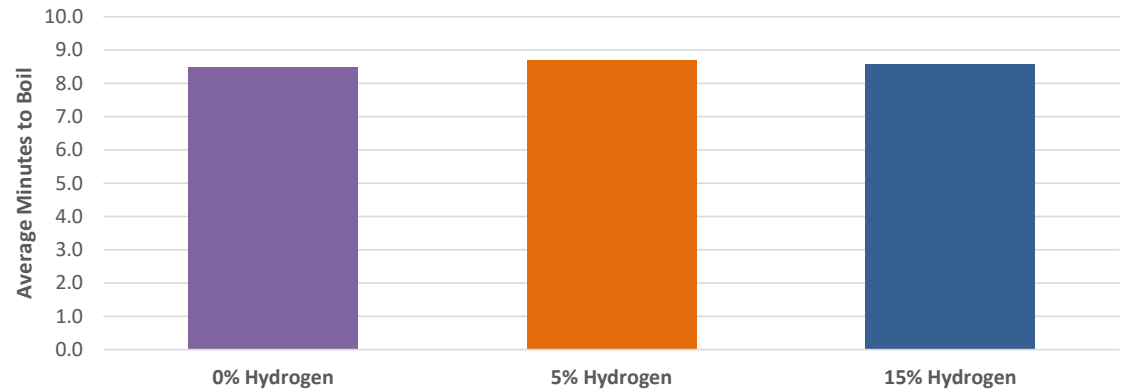
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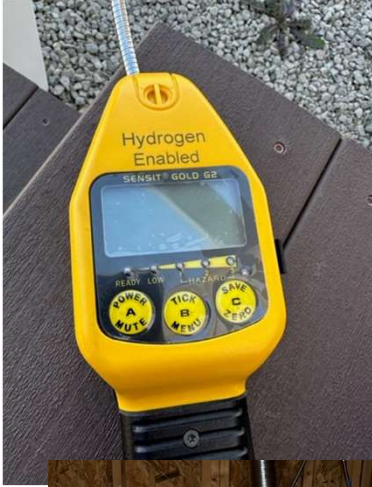


- **Gas range tests were performed with 100% methane, then 15% hydrogen, then 5% hydrogen**
- **At 15% hydrogen the color of the flame was notably lighter in color**
- **No noticeably significant difference in sound**
- **The heat given off was less with the 15% hydrogen blend, but no significant difference in how fast water boiled**

Time to Boil Water Observed on a Residential Stove
at Various Natural Gas Hydrogen Blends (0%, 5%, & 15% Hydrogen)



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Thank you

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