

The American Public's Views on Clean Hydrogen

Findings from a national online survey of 1,511 voters,
including 653 opinion elites

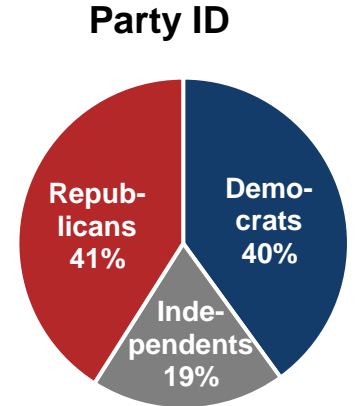
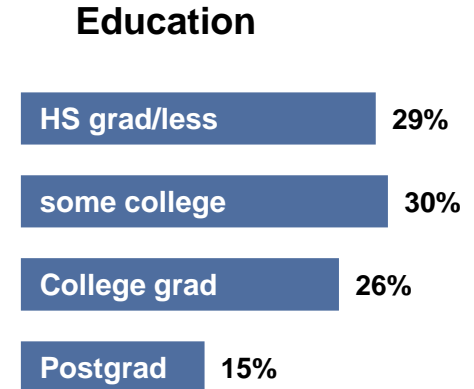
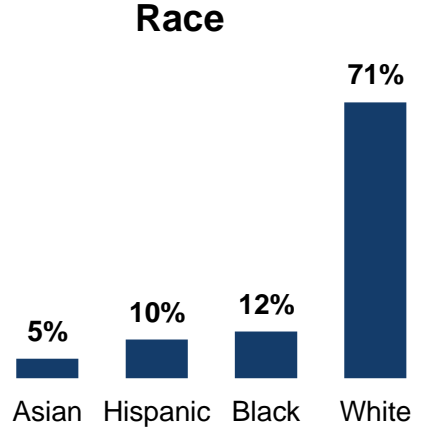
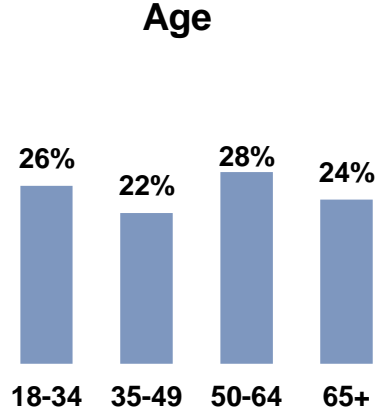
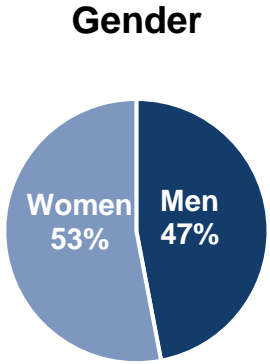
Conducted May 19 to 24, 2022



**Breakthrough
Energy**

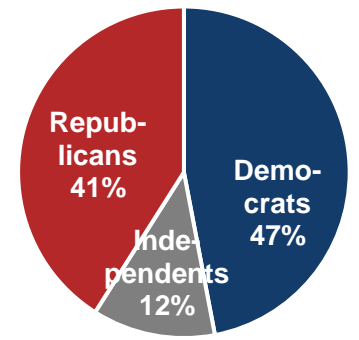
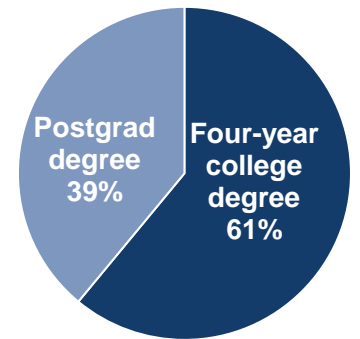
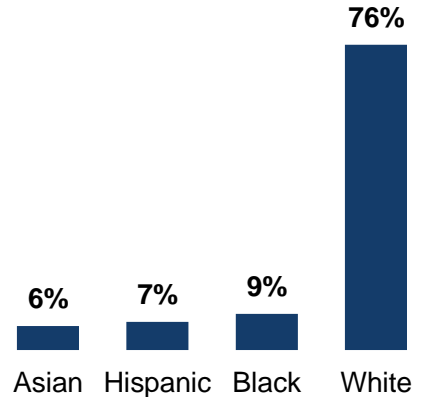
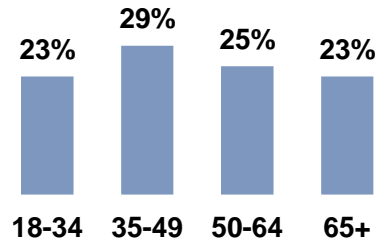
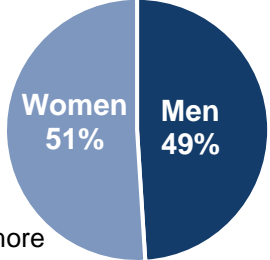
Profiles of the Samples

VOTERS



OPINION ELITES

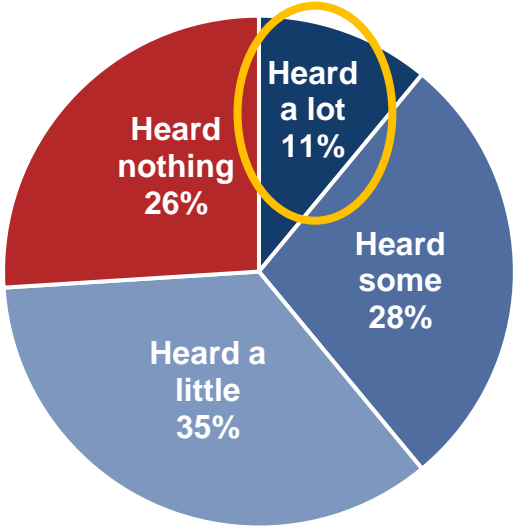
- To qualify they must:
- Be registered to vote
- Have four-year degree/more
- Have high interest in news/read at least five days/week
- Regularly read/listen to/watch news from a list of sources



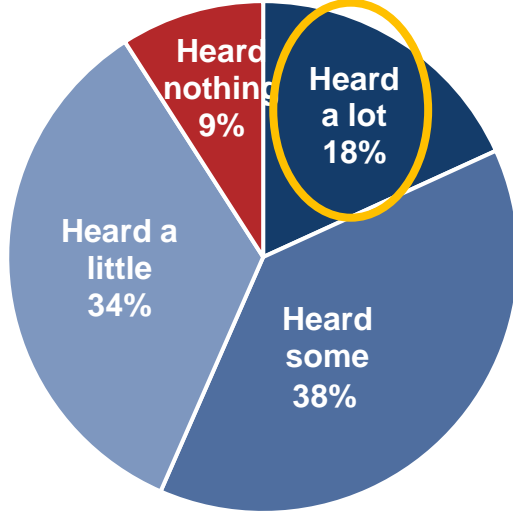
Awareness of the role that H2 can play in our energy future is low, with younger voters and elites being somewhat more informed.

On the topic of energy--including how it is generated, stored, transported, and used--how much have you heard or read about **HYDROGEN** and the role it plays or can play in the future?

ALL VOTERS



OPINION ELITES

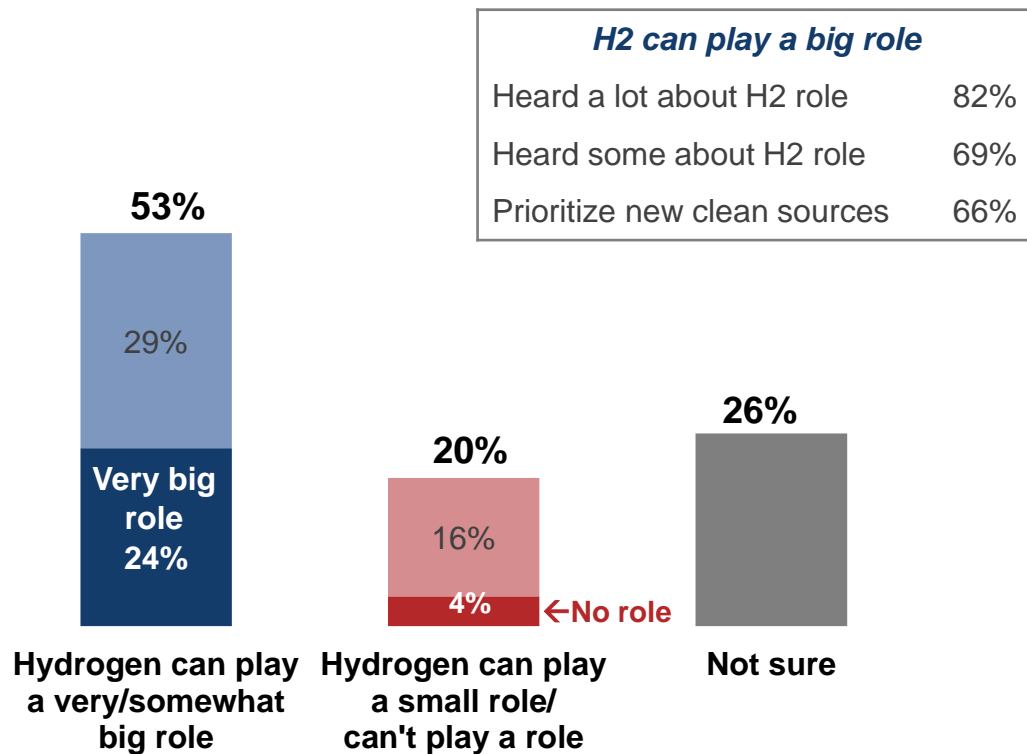


	<i>Heard a lot</i>	
	All voters	Opinion elites
Age 18 to 34	17%	28%
Age 35 to 49	14%	26%
Age 50 to 64	8%	12%
Age 65/older	4%	7%

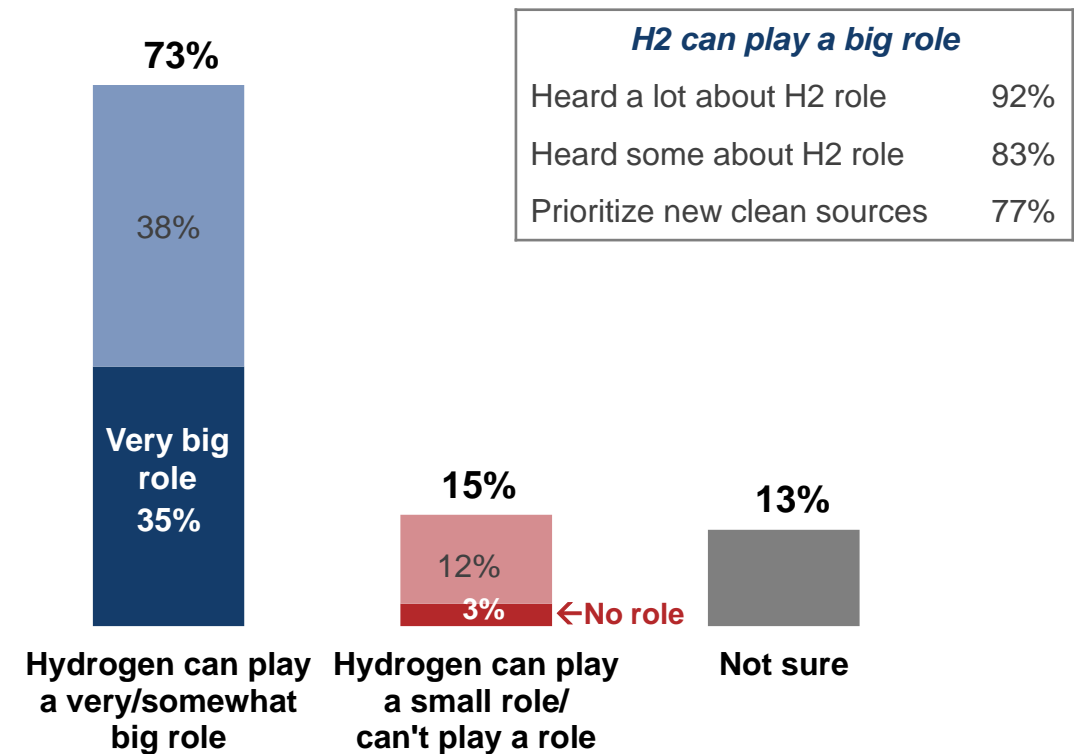
Majorities see a role for H2 in moving toward a clean energy future and addressing climate change; those more informed about H2 do so at very high rates.

Do you think hydrogen can play a role in helping us meet our goals for using more clean energy and reducing climate change?

ALL VOTERS

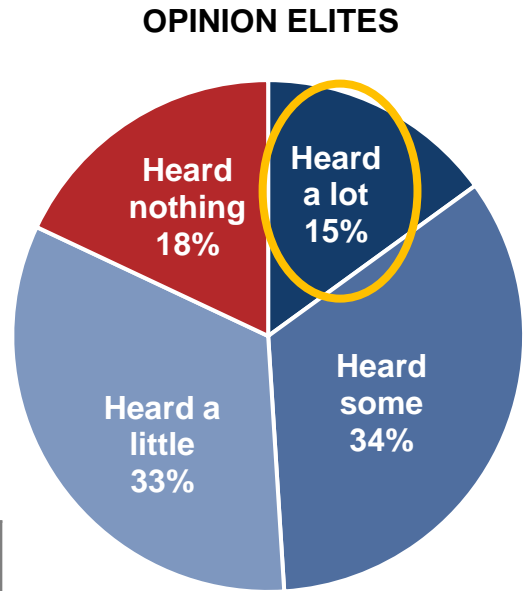
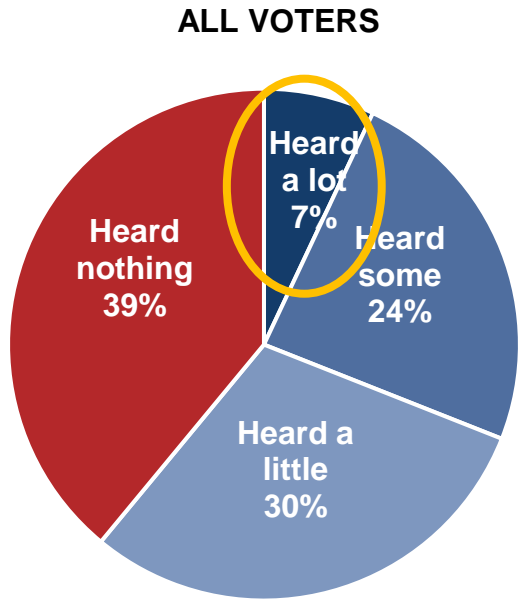


OPINION ELITES



Voters and elites possess even lower levels of awareness about clean H2; again, younger voters are somewhat more informed.

How much have you heard or read about **CLEAN HYDROGEN**?



	<i>Heard a lot</i>	
	All voters	Opinion elites
Age 18 to 34	11%	23%
Age 35 to 49	10%	21%
Age 50 to 64	5%	10%
Age 65/older	1%	4%

With just a brief, neutral description, voters and elites express favorable feelings toward clean H2.

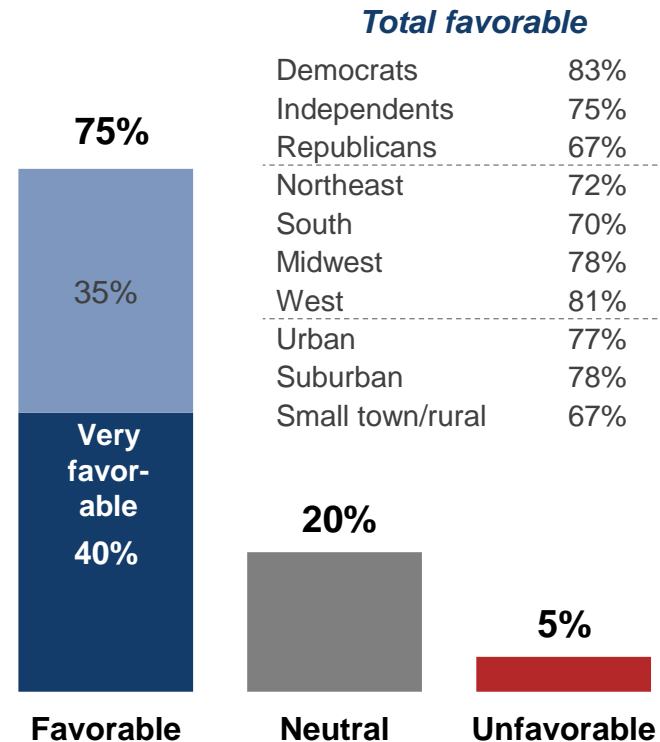
Initial Informed Feelings toward Clean H2

INITIAL DESCRIPTION OF CLEAN H2:

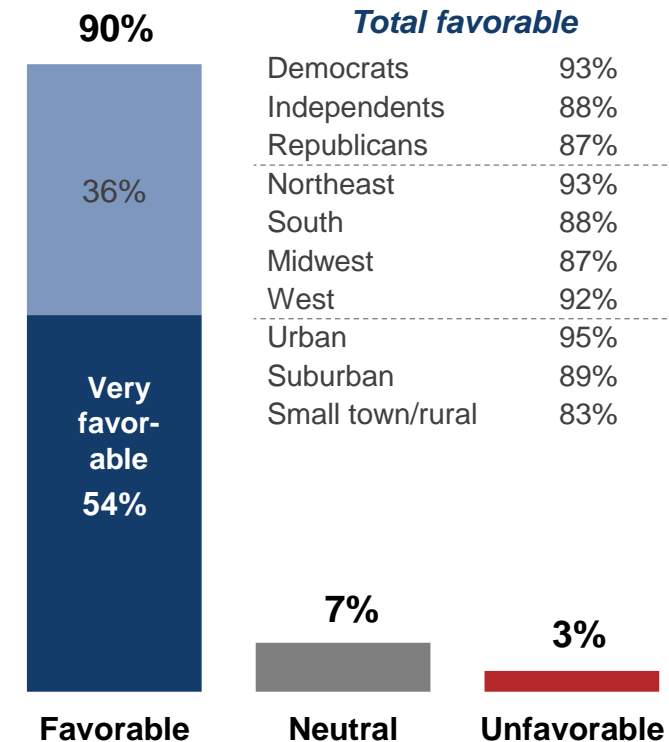
“Hydrogen is a substance that is in most things, including plants, water, and natural gas. When hydrogen is burned in ideal conditions, it generates energy in the form of heat, with only water as a by-product. While the energy created *from* hydrogen is clean, the process to produce it today mostly uses fuels, such as methane, which generates carbon pollution that contributes to climate change.

But it is possible to use clean energy sources such as wind and solar instead of fossil fuels to create what we call **clean hydrogen**—both the process of generating it and the energy created from it do not create carbon pollution. Clean hydrogen can be used to reduce carbon pollution from some of the most challenging industries, including heavy manufacturing, aviation, long-haul trucking, and agriculture.”

ALL VOTERS



OPINION ELITES

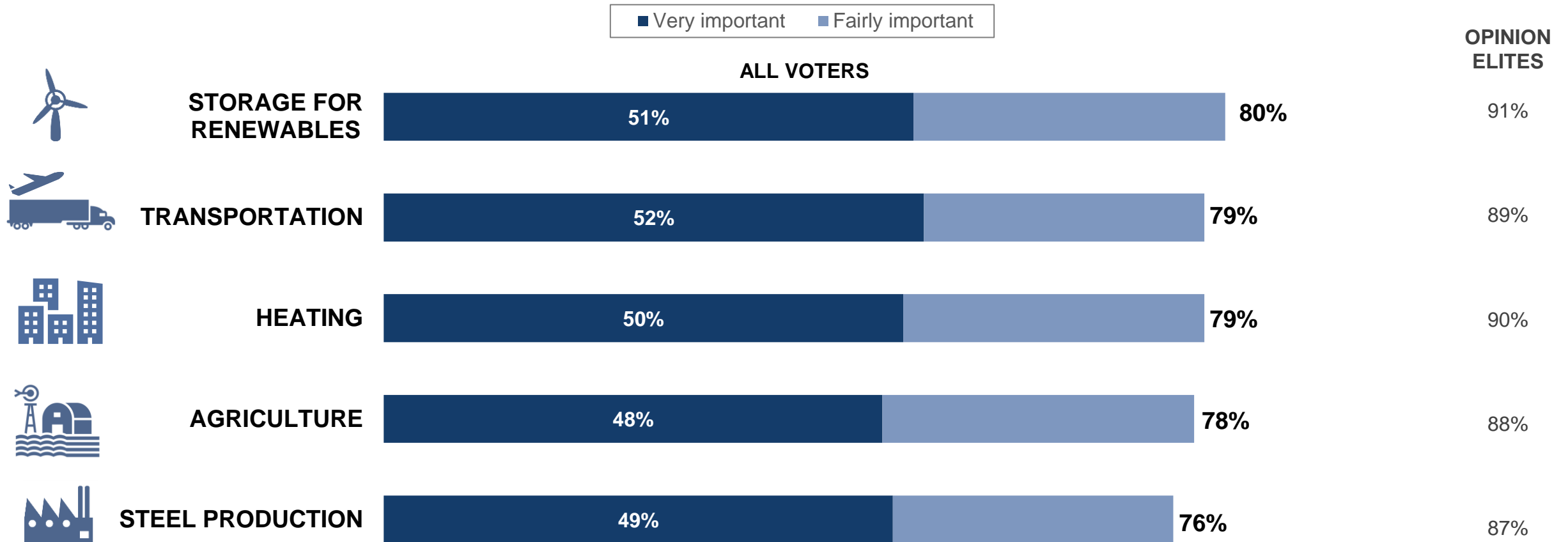


Main Drivers of Favorable Feelings toward Clean H2: *Coded Open-Ended Responses*

Positive Impressions of Clean H2 Based on the Description <i>(among the 75% who have a favorable impression)</i>	All Voters	Opinion Elites
Clean energy	24%	27%
Doesn't contribute to climate change/global warming, greenhouse gases, carbon output/footprint	16%	19%
Doesn't hurt the environment/better for the planet	16%	18%
Reduces/eliminates creation of greenhouse gases; cleaner air; won't harm the atmosphere	13%	11%
Renewable, produced from renewable energy resources, wind, solar	9%	13%
Helps produce energy	8%	11%
Reduces use of/lessens dependence on fossil fuels	4%	6%
Alternate source of energy	4%	4%
Produces water/only byproduct is water	4%	4%
Viable/effective/would work well/would be useful	4%	3%

All uses of clean H2 are deemed important.

Advancements in this industry due to clean hydrogen's potential to reduce the amount of carbon emissions are:



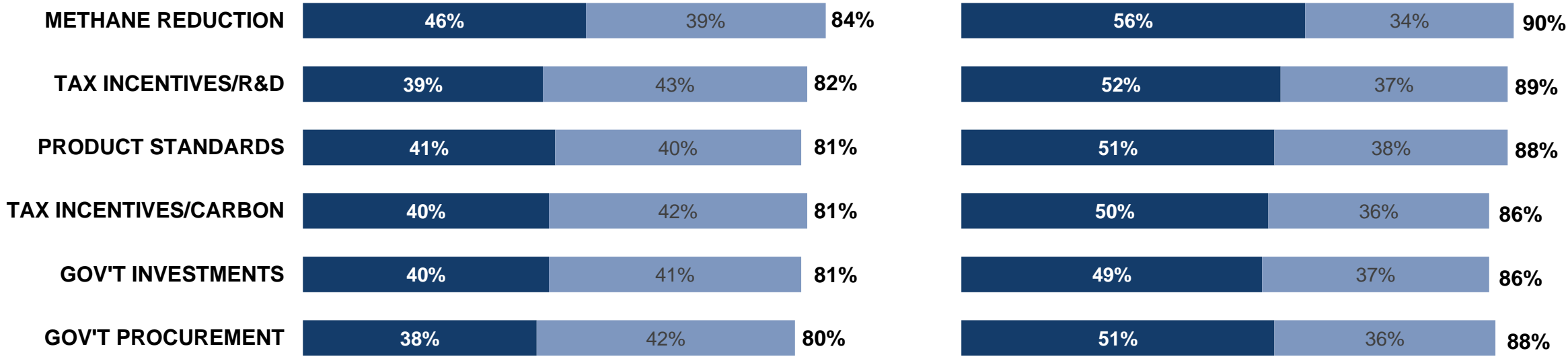
Clean H2 policies garner much support with methane leak reduction standing slightly above the rest.

Support for “Policies that Could Help Advance the Use of Clean Hydrogen in Many Sectors of our Economy”

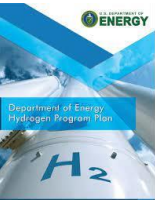
■ Strongly favor ■ Somewhat favor

ALL VOTERS

OPINION ELITES



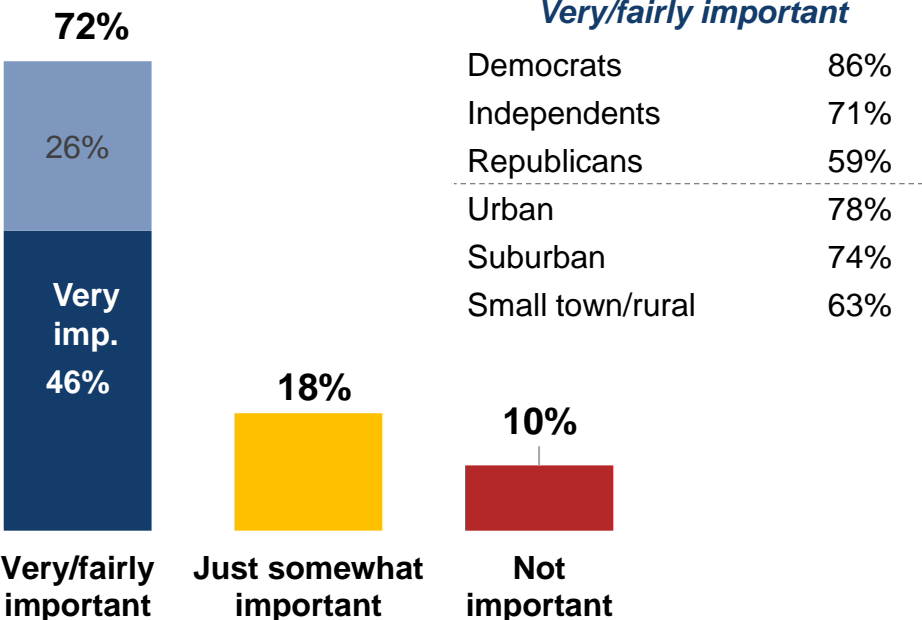
Voters and elites recognize the value of Clean Hydrogen Hubs, providing an opportunity to appeal to small town and rural communities.



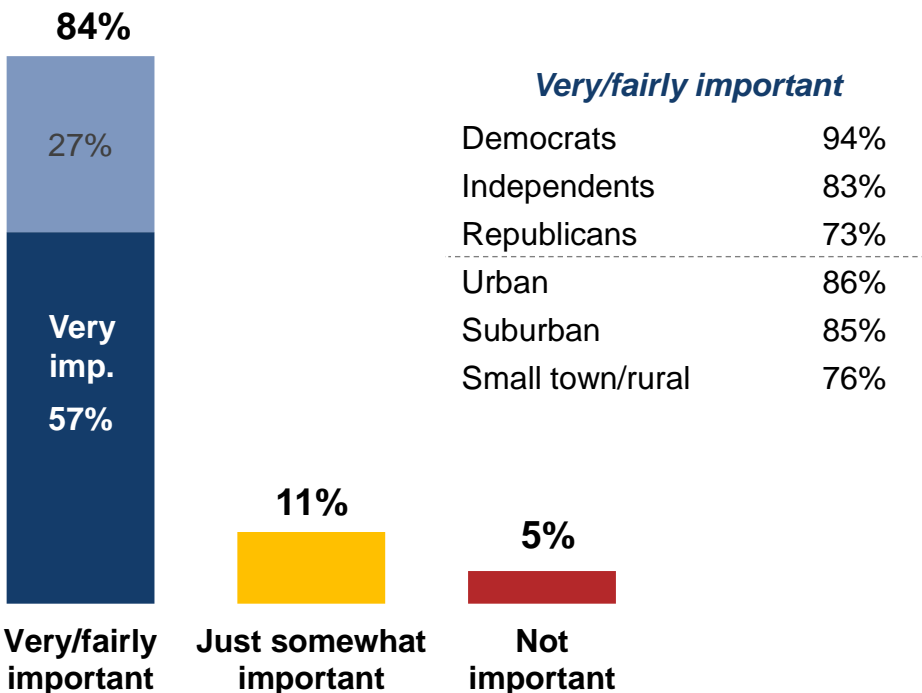
The Department of Energy is creating four regional Clean Hydrogen Hubs across the country. They will serve as demonstration sites where states and private sector partners will work together to explore different ways to improve clean hydrogen production, delivery, storage, and use, with the goal of making it more affordable, efficient, and available.

How important is it for the federal government to support these kinds of initiatives on clean hydrogen?

ALL VOTERS



OPINION ELITES



Storage for renewables, energy independence, and carbon reduction provide a strong messaging triumvirate for clean H2.

<i>Three Most Important Reasons to Continue Advancements in Hydrogen as an Energy Source</i>		All Voters	Opinion Elites
ENERGY INDEPENDENCE	Clean hydrogen will be a 100% American-made, clean energy source, ensuring our country's energy independence.	60%	56%
STORAGE FOR RENEWABLES	Because hydrogen can be stored for a long time after it is made, it is a good way to "store" energy from clean, renewable sources like wind and solar to be used when the wind isn't blowing and the sun isn't shining, and to use for energy during times of year when there are less of these resources available.	59%	56%
CARBON EMISSIONS/CLIMATE	Energy created from clean hydrogen generates no carbon pollution at all, making it one of many potential energy sources that can help reduce carbon emissions and slow climate change.	54%	53%
GLOBAL LEADER/EXPORTS	Countries around the globe are looking to replace the natural gas they get from Russia and the oil they get from the Middle East. The United States has the potential to be a clean hydrogen global leader, exporting billions of dollars of clean hydrogen each year.	45%	46%
CHALLENGING INDUSTRIES	Clean hydrogen is not a silver bullet, but it has enormous potential for use in certain energy intensive industries that create a lot of pollution, like long-haul trucking, airlines and aviation, steel manufacturing, and agriculture. Clean hydrogen holds a lot of promise to vastly reduce the amount of climate pollution these industries create.	42%	44%
FUTURE/R&D	Clean hydrogen is expensive now, but all new technologies start out that way. With more research we can bring down the cost and tap into the tremendous potential of clean hydrogen to revolutionize our economy while protecting communities from harmful carbon pollution for generations to come.	41%	43%
FUTURE/DEPLOYMENT	Clean hydrogen may be expensive now, but all new technologies start out that way. As we build more production and find more ways to use it, we can bring the cost down and tap into the tremendous potential of clean hydrogen to revolutionize our economy while protecting communities from harmful carbon pollution for generations to come.	39%	46%