Frequently Asked Questions

The H Cycle process generates clean, renewable, carbon negative hydrogen that will be used to power emission-free mobility fleets and help to decarbonize our economy, particularly in other difficult-to-decarbonize areas such as the agricultural, refining and industrial sectors.

By diverting post-recycled organic waste from landfills and employing advanced, non-combustion thermal conversion technology, H Cycle converts this waste into renewable hydrogen. This innovative process reduces methane emissions from landfills, which account for 23% of all global methane emissions—a significant contributor to greenhouse gases responsible for pollution and climate change, while also providing renewable hydrogen to meet the demands of our growing energy transition needs. With projects spanning the western United States and a flagship hydrogen production facility proposed in Pittsburg, California, H Cycle is leading the way with its innovative solution.

How does H Cycle work?	The H Cycle process uses heat and electricity to turn organic waste into **renewable** hydrogen. H Cycle's thermal conversion is a non-combustion process that breaks down waste on a molecular level into a synthesis gas (known as syngas); hydrogen is then produced from the syngas. H Cycle's novel process is a carbon negative alternative to the fossil fuel intensive methods currently used to produce hydrogen.
Do consumers need to sort their waste differently before it can be sent to H Cycle?	No, consumers do not need to sort waste differently than they already do. Once consumers recycle and compost their waste, municipalities send this waste to materials recovery facilities (MRFs) that sort the waste. After this first round of sorting, H Cycle conducts a second round of sorting to ensure only organic-rich nonhazardous materials are turned into hydrogen.
Does waste need to be sorted differently than it currently is before being sent to H Cycle?	No. Because the H Cycle process works with heterogeneous organic waste mixtures, it does not require the laborious sorting that other technologies need. However, the waste streams H Cycle receives are pre-processed by third-party material recovery facilities (MRFs) or recycling facilities, where valuable materials are removed. The processed waste H Cycle receives then goes through a second round of

	sorting, ensuring only organic-rich nonhazardous waste is turned into hydrogen.
Why does H Cycle take the waste through a second round of processing?	In the second round of processing, H Cycle further refines and removes contaminants from the waste to ensure that only organic-rich, nonhazardous materials are converted into hydrogen. This process enhances the calorific value of the waste, ensures compliance with environmental regulations, and improves operational efficiency.
Is H Cycle a replacement to recycling and/or composting?	H Cycle is designed to supplement recycling and composting programs to maximize the diversion of waste from landfills. Our process takes the leftover organic waste after all non-contaminated recyclable material is taken out and converts it into renewable hydrogen. It is not a replacement for recycling or composting but is the complementary step after these. H Cycle's innovative process complements the existing recycling process by turning contaminated organic waste headed to landfills into renewable hydrogen.
How does H Cycle contribute to reducing global emissions?	H Cycle's conversion method helps to reduce harmful emissions that exceed 5% of global GHG through avoiding: (1) Methane emissions from slowly decaying landfill based organic waste (2) Fossil fuel use from the production of hydrogen (3) CO_2 emissions from fossil fuel use in the transportation industry and other industrial sectors H Cycle's pilot facility in Pittsburg, CA is projected to reduce CO2 emissions by 80,000 tonnes per year or more, which is equivalent to approximately 19% of the City of Pittsburg's yearly greenhouse gas emissions or removing 17,000 passenger vehicles from the road.
Is H Cycle an incinerator?	No. H Cycle's advanced technology thermally converts organic rich waste by reorganizing the components at a molecular level, with net neutral to negative carbon emissions and a minimal greenhouse gas footprint.

Is H Cycle's technology combustion of MSW?	No. H Cycle's advanced thermal conversion technology is a non-combustion process that rearranges waste on a molecular level into a synthesis gas (known as syngas), which is primarily composed of carbon monoxide and hydrogen.
What is the difference between H Cycle and electrolysis for hydrogen production?	H Cycle's hydrogen production is unique for being both cost-effective and environmentally friendly. H Cycle uses the energy stored in organic waste materials to generate green hydrogen, which consumes three times less electricity than electrolysis.
How is most hydrogen produced today?	Approximately 95% of hydrogen is produced through steam methane reforming (SMR), a process that utilizes natural gas to generate hydrogen.
How many tonnes of hydrogen does H Cycle produce each year?	A single unit H Cycle facility would produce approximately 5,500 tonnes per year of green hydrogen. A two-unit H Cycle facility would produce approximately 11,000 tonnes per year of green hydrogen.
What is green hydrogen?	Green hydrogen is produced with a neutral to negative carbon intensity (CI) score. A carbon intensity score refers to the amount of biogenic carbon that is emitted as part of the production process. Since the CI score of the hydrogen produced by H Cycle is less than or equal to zero, H Cycle's renewable hydrogen can also be considered "green hydrogen."
What is electrolysis?	Electrolysis is a process that decomposes a compound by sending an electric current through it. When an electric current is sent through water, water is split into hydrogen and oxygen. The electrolysis process uses approximately 4x more electricity than H Cycle's process.
What happens to the materials that are left over after hydrogen has been extracted?	Non-hazardous slag is a byproduct created during the H Cycle conversion process. When the waste is converted to hydrogen, inert (non-reactive) materials are removed to create non-hazardous vitrified slag.

	The slag generated during waste conversion is granulated and stored before being transported off site to be disposed of at permitted landfills as non-hazardous waste or beneficially reused for commercial construction as: a roadbed aggregate material, a raw material for cement manufacturing, and/or an additive to asphalt manufacturing.
Where is H Cycle located?	H Cycle intends to build and operate several facilities in California, starting with a flagship facility in Pittsburg that is currently advancing through a California Environmental Quality Act (CEQA) Environmental Impact Report (EIR). The company is currently pursuing projects in the Western U.S., Japan, and Korea, among other regions.
How is H Cycle helping California meet its climate goals?	H Cycle's projects throughout California are aimed at helping to address the state's 2045 clean energy targets by working with local jurisdictions to divert waste, create renewable hydrogen energy, and expand zero-emission vehicle (ZEV) fleets.
What is SB 1383?	SB 1383 requires local jurisdictions in California to reduce the amount of organic waste in landfills to address the harmful methane emissions produced by waste. The regulations outlined in the bill aim to divert 50% of organic waste from landfills below 2014 levels by 2020, and 75% by 2025. To meet the emission reduction goals outlined in SB 1383, jurisdictions can select from a variety of organic waste collection services to match their unique communities and local infrastructure.
How can H Cycle help municipalities meet the goals outlined in SB 1383?	An H Cycle facility can divert waste that would otherwise be sent to landfills and use it as feedstock to create renewable hydrogen. Diverting this waste from landfills prevents methane emissions from the decomposition of organic-rich waste. Additionally, the renewable hydrogen produced will be used as fuel for zero-emission vehicles (ZEV) and heavy-duty fleets. For example, the flagship H Cycle facility in Pittsburg is projected to produce enough renewable hydrogen fuel for

	heavy-duty trucks to reduce carbon dioxide emissions by 80,000 tonnes per year or more, which is equivalent to approximately 19% of City of Pittsburg's yearly greenhouse gas emissions or removing 17,000 passenger vehicles.
What is the CalRecycle Article 2 Determination?	An Article 2 Determination from CalRecycle recognizes a technology that reduces emissions to a greater extent than composting organic waste. Technologies that receive an Article 2 Determination are identified as a tool that jurisdictions can use to meet the landfill diversion requirements of SB 1383. H Cycle received the first Article 2 Determination from CalRecycle, recognizing that H Cycle's technology reduces more CO2 emissions than the other SB 1383 approved technologies. With the Article 2 Determination, H Cycle's cutting-edge technology is poised to be an effective tool to help California achieve its clean energy goals through a twofold approach, by diverting post-recycled organic waste from landfills and converting this waste through non-combustion thermal conversion into green hydrogen to fuel emission-free medium/heavy-duty truck fleet.
How many jobs will the H Cycle facility in Pittsburg create?	During construction, the H Cycle facility in Pittsburg will create approximately 175+ construction jobs over 15 months. When operational, the facility will create approximately 25-30 permanent, skilled operating jobs.
Will H Cycle facilities be constructed under project labor agreements?	Yes. H Cycle signed an agreement with the State Building and Construction Trades Council (BTC) of California, to maintain a skilled construction union workforce employed on the multiple H Cycle projects planned across California.
How many tonnes of hydrogen will the Pittsburg facility produce each year?	The Pittsburg facility will produce up to 15-17 US tonnes per day (TPD) of hydrogen, which is enough to fuel over 600-700 semi-trucks for a year.

What will the environmental impact of the facility be on the surrounding communities?	H Cycle is pursuing a full Environmental Impact Review (EIR) for the flagship facility in Pittsburg, as opposed to a Mitigated Negative Declaration (MND) to offer additional opportunities for public engagement. The draft EIR was published on January 2, 2024, with a public comment period that lasted until March 18. H Cycle has responded to public comment, and the responses will be incorporated into the final EIR. H Cycle will adhere to a mitigation monitoring and reporting program to ensure that potential environmental impacts, as identified in the report, are accurately accounted for, and reduced. During the construction of the facility, there is potential for temporary noise impacts. However, H Cycle is committed to implementing best practices in managing and reducing potential negative impacts to the surrounding community and environment throughout construction. H Cycle looks forward to building a long-standing relationship with the community of Pittsburg and aims to provide a project that maximizes environmental and economic benefits for the surrounding community.
When operational, will H Cycle's facility contribute to noise pollution?	No. The operation of the Pittsburg facility would not result in a perceptible increase in ambient noise levels at the nearest noise-sensitive receiver.
How will H Cycle's facility impact visibility?	The project site consists of land zoned and designated for industrial uses by the City of Pittsburg General Plan. The facility would be consistent with the visual character and overall design guidelines of industrial uses outlined in Pittsburg Municipal Code (PMC) Chapter 18.36.
How will H Cycle's facility impact local emissions?	H Cycle's use of organic-rich waste feedstock to produce hydrogen avoids significant landfill emissions and offsets production process emissions. The Best Available Control Technologies will be installed to further reduce any potential emissions during facility operations. The facility will minimize

	remaining emissions by interconnecting renewable power and adding design features to save energy.