Re: Front and Centered Comments on Ecology's Draft State Environmental Policy Act Draft Programmatic Environmental Impact Statement for Green Hydrogen Energy Facilities in Washington State

Department of Ecology
Clean Energy Coordination
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Thank you for the opportunity to provide input on Ecology's Draft Programmatic Environmental Impact Statement (Draft PEIS) for Green Hydrogen.

Front and Centered is a climate justice coalition of organizations led by and serving communities of color in Washington. Our mission is to advocate for the interests of frontline communities, who are first and worst impacted by the climate crisis, in advocating for a just transition from an extractive to a regenerative economy.

Environmental and climate justice requires "equity, fairness, and transparency in distributing environmental benefits and burdens, ensuring all individuals and communities have equal access to a healthy and sustainable environment while advancing just solutions to the climate crisis."[1] While green hydrogen can have positive impacts when produced and used in ways that are equitable and safe, projects must be assessed critically using environmental and climate equity frameworks to prevent many of the same harms our most vulnerable communities experience from our current, fossil-fuel dependent systems.

As green hydrogen projects are developed in Washington, production methods that do not simultaneously protect frontline communities and reduce climate warming will have serious environmental and health impacts and should not be implemented. In this letter, we seek to elevate environmental and climate justice concerns for lead agencies to consider when making decisions about green hydrogen facilities, including decisions related to siting and design, environmental reviews, mitigation measures, and assessing probable significant adverse environmental impacts.

[1] Just Solutions, Hydrogen Energy - A Critical Review to Ensure Community and Climate Bene□its (2023).

I. Washington's green hydrogen definition is not aligned with global and national industry-wide usage.

Washington state's definition of green electrolytic hydrogen is inconsistent with both national and global definitions of green hydrogen developed within similar timeframes,[2] which refer to hydrogen produced through electrolysis with entirely or "near 100%" renewable energy.[3] Washington's definition for "green electrolytic hydrogen" includes hydrogen produced through electrolysis and does not include hydrogen manufactured using steam reforming or any other conversion technology that produces hydrogen from a fossil fuel feedstock.[4]

Despite the Draft PEIS stating that current laws will require an electricity supply free of GHG emissions by 2045[5], this discrepancy in definitions is misleading. This is especially so given that many of the most prominent impacts and harms resulting from green hydrogen production are derived from the type of electricity source used and recent uncertainty about the future of the Clean Energy Transformation Act potentially altering state decarbonization requirements.[6] While the term "renewable hydrogen" is more aligned with standard definitions of green hydrogen by explicitly requiring electricity inputs be renewable[7], failing to use industry standards for commonplace terms like "green hydrogen" increases the potential for harms stemming from the use of fossil fuels in production to be improperly assessed and mitigated in Washington.

II. There will likely be significant localized pollution impacts that are not discussed in the Draft PEIS.

The Draft PEIS concludes that there will likely be less than significant pollution impacts from green hydrogen facilities based on the assumption that laws regulating air and water pollution will be met and relevant permits will be obtained and abided by. However, given the way that existing laws and permit processes allow certain communities to bear the worst effects of pollution, pollution impacts cannot accurately be assessed solely from permit and regulation compliance. Therefore, it is inappropriate to determine the significance of any impacts on air quality and local water bodies based on the likelihood of mere compliance with existing legal requirements.

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[2] Washington State Department of Ecology, State Environmental Policy Act Draft Programmatic Environmental Impact Statement for Green Hydrogen Energy Facilities in Washington State (Draft PEIS) (2025) at 29.
[3] Green Hydrogen Organisation, Green Hydrogen Standard 2.0 - The Global Standard for Green Hydrogen and Green Hydrogen Derivatives (2023) at 5; *Hydrogen Production: Electrolysis*, U.S. Department of Energy, https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis (last visited Jan. 27, 2025).
[4] RCW 80.50.020(15)(a)-(b).
[5] Draft PEIS at 23.
[6] Jerry Cornfield, WA State Standard, *Washington voters approve pro-natural gas measure*, https://washingtonstatestandard.com/2024/11/08/washington-voters-approve-pro-natural-gas-measure/ (last visited Feb. 4, 2025).
[7] RCW 80.50.020(22).

The Department of Health recognizes certain “essentials” to community health like access to healthy foods, clean air, quality schools, and job opportunities as being foundational to our ability to live a healthy life.[8] Given the way past polices have led to disparate distribution of resources in different communities across the state, true health and environmental equity cannot be achieved without understanding the ways that present day decisions around siting, even when made in ways that are aligned with current laws and permit requirements, often exacerbate existing disparities resulting from “discriminatory practices, structural racism, and deep-rooted inequities.”[9]

When assessing the impacts of a project on air and water quality, Ecology should use existing data in the Environmental Health Disparities map, which includes a more detailed analysis for health and pollution indicators categorized by environmental exposures and environmental effects.[10] Socioeconomic and sensitive population indicators will also be crucial to determining how certain populations are being disproportionately affected by existing pollution that will likely be exacerbated by a new green hydrogen project.

A. Impacts from wastewater pollution cannot be determined through general compliance with relevant laws and permits.

The Draft PEIS identifies wastewater generated by electrolysis as a source of water pollution for both surface and groundwater, but concludes that as long as plants comply with existing regulations and mitigation measures, there will likely be “less than significant impacts.”[11] While we recognize that a more in-depth analysis of project specific impacts will happen when individual sites are assessed for feasibility, the Final PEIS should include a more nuanced discussion of the potential impacts of this type of wastewater and why mitigation for concentrated brine streams are often unsustainable. The hidden burdens of treating wastewater generated by green hydrogen, both financial and pollution based, must be included in an assessment of wastewater impacts.

Many desalination processes and treatment technologies, including options identified in the Draft PEIS such as onsite treatment or discharge to publicly owned treatment works, can be incredibly expensive and energy intensive.[12] 1 kWh of electricity is needed for every m^3 of

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[8] *Race and Place*, Washington Department of Health, https://doh.wa.gov/community-and-environment/health-equity/race-and-place (last visited Jan. 21, 2025).
[9] *Id.*
[10] Washington Environmental Health Disparities Map, Washington State Department of Health & University of Washington Environmental and Occupational Health Sciences, https://fortress.wa.gov/doh/wtnibl/WTNIBL/ (last visited Jan. 22, 2025).
[11] Draft PEIS at 113.
[12] *Id*. at 47; Kori Williams, T*he desalination process gives us freshwater - at a huge environmental cost,* World Economic Forum, https://www.weforum.org/stories/2022/12/desalination-process-freshwater-negative-environmental-cost/#:~:text=Bloomberg%20reports%20that%20desalination%20uses,our%20dependence%20on%20fossil%20fuels (last visited Jan. 21, 2025).

purified water produced through desalination and currently, “only 1% of desalination projects around the world are powered by renewable energy.”[13]

Further, while it can be assumed that brine discharge will be regulated through National Pollutant Discharge Elimination System permits for surface water, osmotic shock is a local pollution risk that can harm animals, algae, and marine ecosystems at large in sensitive environments.[14]

The Draft PEIS also fails to account for gaps in existing regulations and enforcement systems that illustrates how permit compliance is not adequately indicative of pollution impacts. For example, raised water temperature caused by climate change–which contributes heavily to ecosystem health–is not explicitly regulated by the Clean Water Act (CWA). Instead, thermal pollution is regulated through requirements for “best available treatment economically available”[15] and variance processes due to the unique properties of heat pollution, such as dissipation rates.[16] However, climate change induced warming can interact with existing heat pollution and create uncertainties for water quality in ways that states are currently not explicitly required to account for when creating TMDLs.[17]

In particular, the discharge allowance for brine is limited by the scope of other pollution specific standards (like those in the CWA). As a result, if factors like climate change induced rising water temperatures are not accounted for when pollution limits are created, the resulting pollution standards are less holistic due to “additional uncertainties to the data-based assumptions in TMDLs concerning hydrologic scenarios and influences on the pollutant being addressed.”[18]

Finally, during the period of 2012-2022, the Department of Ecology has been late in submitting its impaired water list by the required deadline.[19] Since NPDES permits are created based on the specific pollution levels and sensitivities of the individual water bodies on the impaired water list, not having the most accurate and updated information at the time of permit condition setting can make compliance with NPDES permits a significantly less effective measure for pollution impacts in Washington state.[20]

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[13] Leigh Collins, ReCharge, *Vast majority' of green hydrogen projects may require water desalination, potentially driving up costs*, https://www.rechargenews.com/energy-transition/vast-majority-of-green-hydrogen-projects-may-require-water-desalination-potentially-driving-up-costs/2-1-1070183 (last visited Jan. 21, 2025).

[14] Arjun Makhijani, Ph.D. & Thom Hersbach, Ph.D., Hydrogen: What Good Is It? A Technical Exploration o□ the Potential o□ Hydrogen to Contribute to a Decarbonized Energy System (2024) at 15.

[15] See, e.g., 33 U.S.C. § 1342(a)(1)(B); 40 CFR § 125.3(c)(3).

[16] *See* 33 U.S.C. § 316(a).

[17] *See* Climate Change and the CWA 303(d) Program - Practices and Ideas □rom Conversations Among States, Territorial, and Tribal Sta□□, Environmental Law Institute, (2022).

[18] *Id.* at 2.

[19] *See* Puget Sound: Further Actions Could Improve E□□orts to Address Impaired Water Quality That Threatens Salmon, U.S. Government Accountability O□□ice, GAO-24-105687 (2023).

[20] *Overview of Listing Impaired Waters under CWA Section 303(d)*, U.S. Environmental Protection Agency,

These fundamental flaws in the permitting process indicate that permit compliance cannot be the main determinate for whether water resources are likely to be impacted.

B. Impacts from air pollution cannot be determined through general compliance with relevant laws and permits.

While Washington currently meets criteria pollutant air quality standards for most areas within the state, "compliance with laws and permits"[21] should not result in a finding of less than significant impacts on air quality. The PEIS focuses on national ambient air quality standards (NAAQS) attainment as one of the major indicators that impacts from air pollution will not be significant.[22] However, even with current attainment designations across the state, Ecology has identified 16 overburdened areas which have communities facing "a higher death rate from air pollution than the state average" because of health conditions linked to anthropogenic particulate matter 2.5 pollution.[23] These areas also have higher rates of chronic respiratory, cardiovascular conditions, and lower average life spans than people in the rest of the state.[24] PM 2.5 is a criteria pollutant with an air quality standard that is accounted for when making a final designation for an area, which means that these health risks exist even when most of the state is in attainment for NAAQS.[25] This demonstrates the ineffectiveness of relying on compliance with air quality standards set by current laws to determine the scale of air pollution related impacts stemming from green hydrogen production. Even if a potential project site is within NAAQS attainment, existing pollution burden in an overburdened community could lead to significant air quality impacts and should be a part of the programmatic risk assessment.

The Draft PEIS also states that because electrolysis uses electricity, "it does not directly produce regulated pollutants such as NOx (nitric oxide and/or nitrogen dioxide) and SOx (sulfur oxides; sulfur monoxide, sulfur dioxide, and/or sulfur trioxide) or emit carbon dioxide (CO2)".[26] Despite not being within the scope of this assessment, air pollution impacts are almost entirely dependent on the source of electricity being used for electrolysis. The entire life cycle of hydrogen, from material extraction to distribution, must be included in an impact assessment for air pollution caused by different production methods. If electrolysis is powered via a carbon-intensive grid, this technology can result in large CO2 emissions.

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https://www.epa.gov/tmdl/overview-listing-impaired-waters-under-cwa-section-303d#:~:text=What%20is%20a%20Clean%20Water,the%20water%20is%20fully%20restored (last visited Jan. 21, 2025).

[21] Draft PEIS at 88.

[22] *Id.* at 89.

[23] *New report shows air pollution hits Washington's most vulnerable the hardest*, State of Washington Department of Ecology, https://ecology.wa.gov/about-us/who-we-are/news/2023/dec-28-new-report-shows-air-pollution-hits-washington-s-most-vulnerable-the-hardest (last visited Jan. 21, 2025).

[24] *Id.*

[25] *Id.*

[26] Draft PEIS at 45.

For example, a green hydrogen plant in Texas using electrolysis powered by a fossil-fuel heavy grid would "have an average annual carbon intensity over 20 kg CO2 per kg H2.[27] In highly industrialized areas within the geographic scope of the Draft PEIS such as Yakima and South King County, these emissions will only compound the health impacts already being felt by communities who live and work near a multitude of air pollution sources. When accounting for potential emissions from electrolysis that uses electricity produced by fossil fuels in addition to existing air pollution conditions, is it unlikely that a finding of less than significant impacts on air quality can be justified.

III. Green hydrogen projects will likely burden natural resources and public utilities resulting in significant impacts.

Some of the most serious environmental justice concerns related to green hydrogen production stem from the potential to strain water and energy resources in communities that are already facing the consequences of water scarcity, overburdened energy grids, and unaffordable energy. Priorities for local water and energy use must be weighted heavily when making siting decisions. While a site specific analysis will occur during environmental reviews of sites, certain environmental and climate justice considerations must be an integral part of the broader assessment of resource impacts due to green hydrogen as a whole.

A. Additionality must be considered when analyzing impacts on public utilities and communities throughout the state.

Despite the Draft PEIS' limited scope, which prevents meaningful consideration of hydrogen production fuel sources, impacts on public utilities and the communities who rely on them cannot be properly assessed without considering issues surrounding additionality. Additionality is the concept that renewable energy used in hydrogen production must come from new renewable sources rather than existing ones to ensure that hydrogen projects do not detract from other decarbonization efforts.[28] This is particularly important given Washington's codified distinctions between green hydrolytic hydrogen, which can use electricity derived from fossil fuels in hydrogen production, and renewable hydrogen, which must be made with renewable resources.[29] Additionality must be one of the considerations used to make decisions about hydrogen projects.

The benefits of no direct emissions from hydrogen production are not material if facilities use electricity that originally went to other homes and businesses. Even if said electricity is generated with renewables, this diversion could create gaps in supply that are filled with electricity generated with fossil fuels. The Draft PEIS is clear that analysis depends on

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[27] Tessa Wiess, Chathurika Gamage, et. al., Rocky Mountain Institute, Hydrogen Reality Check: All "Clean Hydrogen" Is Not Equally Clean, (Oct. 4, 2022) https://rmi.org/all-clean-hydrogen-is-not-equally-clean/ (last visited Feb. 4, 2025).
[28] Zachary Byrum & Ankita Gangotra, World Resources Institute, What Is There To Debate About U.S. Clean Hydrogen Incentives?, https://www.wri.org/technical-perspectives/45v-hydrogen-production-tax-credit-guidance (2024).
[29] Draft PEIS at 29.

assumptions that hydrogen facility developers have “contracted for sufficient electricity” and that state decarbonization goals will be met within mandated timeframes.[30] However, without discussing the importance of electricity sources and current grid capacity to sustain future hydrogen projects, the Final PEIS will not include an adequate discussion of “probable significant adverse environmental impacts, and related mitigation measures.”[31]

B. Energy affordability is not properly identified as a significant impact.

Rising costs associated with green electrolytic hydrogen production will likely exacerbate existing inequities that put lower and fixed income people at risk from high utility debt and disconnection, and any siting decisions must consider how these costs will be felt by communities who are already experiencing this energy burden.

Current cost estimates of energy production through electrolysis are $5-$6/kg.[32] For comparison, hydrogen produced using natural gas costs between $0.5-$1.7/kg.[33] A study that looked at U.S. grid-based hydrogen production found that failure to account for additionality, along with deliverability and hourly matching, could increase power prices in California by 8%.[34] These higher production costs, as well as increased competition for limited energy supply, raise questions about how these additional demands on the electrical grid will affect consumer electrical rates.This demonstrates that even if sufficient renewable electricity supplies exist to support hydrogen production, there are a wide range of impacts related to energy affordability that must also be a part of the framework for green hydrogen production.

Cost related impacts of hydrogen are not assessed in the Draft PEIS based on the assumption that impacts related to construction, operation, and decommissioning a green hydrogen plant using biomass fuels or renewable natural gas would not change despite high production costs because a plant would not be built where it was not cost-effective to provide these fuels.[35] Electrolysis is a highly energy intensive process, which can require 50 kWh for every 1 kg hydrogen produced.[36] Environmental justice concerns and cumulative impacts associated with green hydrogen must include an assessment of the potential cost burden associated with high production costs that could be felt by proximate communities.

C. Water scarcity is not accurately weighted as a limiting factor for green hydrogen projects that could have severe impacts on nearby communities and the local environment.

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[30] *Id.* at 22, 209.
[31] RCW 43.21C.535(1).
[32] Cost o Electrolytic Hydrogen Production with Existing Technology, U.S. Department o Energy (2022) at 1.
[33] Global Hydrogen Review, International Energy Agency (2021) at 7.
[34] *See* Wilson Ricks & Qingyu Xu et. al, Minimizing emissions rom grid-based hydrogen production in the United States, 18 Environ. Res. Lett.1 (Jan. 6, 2023).
[35] Dra t PEIS at 144.
[36] *Id*. at 213.

Availability of water resources is one of the most important factors to consider when making siting decisions for green hydrogen, as the amounts of water needed for these processes are staggering. A single SMF facility could use over 293 million gallons of water a year.[37] On a national scale, low-end estimates of green hydrogen production would require 140 billion gallons of water per year.[38] Even if the proper water rights and related permits were issued, confirming the underlying assumption in the PEIS' analysis that this ensures there is enough water to meet production demand, it is still highly unlikely that there will be no significant impacts on water availability for the broader area.

The Draft PEIS analyzes water resources impacts with the assumption that if enough water does not exist to support a green hydrogen project, it would not be built due to infeasibility.[39] Therefore if there is enough water to sustain a project, that must mean that "no significant and unavoidable adverse impacts related to water resources would occur."[40] Despite water resources being a highly site-specific issue that will be further analyzed in the environmental review stage, the Final PEIS should include a general assessment of the ways green hydrogen could impact water resources in different areas of the state. Raising these issues in the Final PEIS will provide agencies and local jurisdictions with better guidance and more information as they develop mitigation strategies and community impacts.

For example, some central Washington locations within the geographic scope of the study include cities within the Yakima River Basin, such as Sunnyside, Yakima, and Kennewick. When determining whether adverse impacts related to water could occur if a project were to be built in this area, some necessary context is missing. In 2023, Ecology declared a drought emergency in the Yakima River Basin that remained in effect into 2024.[41] Even outside of periods of drought, "water is a finite resource in the Yakima Basin."[42]

The geographic scope also includes potential project sites in Clallam and Whatcom counties, where communities have dealt with low surface water and groundwater availability and have had to truck in water to meet their needs."[43] For agricultural areas, junior water rights were curtailed to protect senior water rights and for private landowners, warnings were issued to prepare for reduced pumping from local shallow wells.[44] Given existing stressors on water resources already being experienced across the state and future climate trends indicating that

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[37] Dra□t PEIS at p. 114.
[38] Arjun Makhijani, Ph.D. & Thom Hersbach, Ph.D., Water Requirements □or Various Approaches to Hydrogen Production: Quantitative, Siting, and Resilience Considerations, Institute □or Energy and Environmental research (2024) at 5.
[39] *See* Dra□t PEIS at 102.
[40] *Id.*
[41] *Supporting a drier Yakima Basin in 2024*, Department o□ Ecology, https://ecology.wa.gov/blog/march-2024/supporting-a-drier-yakima-basin-in-2024 (last visited Jan. 16, 2025).
[42] *Id.*
[43] *Drought Response*, Department o□ Ecology, https://ecology.wa.gov/water-shorelines/water-supply/water-availability/statewide-conditions/drought-response (last visited Jan. 16, 2025).
[44] *Id.*

our region will likely “see longer and more severe droughts in the future,” it is unlikely that green hydrogen would have no significant and unavoidable adverse impacts related to water resources.[45]

Further, the true scale of water resources needed for green hydrogen cannot fully be realized without considering water usage for electricity sources used in hydrogen production. While outside the scope of the PEIS, gross water use rather than net water use must be included in decision making processes. For example, impacts on water resources will vary depending on whether renewable electricity or thermal electricity is used during electrolysis, the latter of which uses substantial quantities of water with an average of 15 gallons used to produce one kWh of electricity.[46] While this type of analysis will occur on a project specific level, it is crucial to identify these potential impacts at the PEIS level to avoid replicating the same harms and inequities perpetuated by current fossil fuel extraction and production methods.

IV. Broader transportation justice concerns must be properly identified at the programmatic level.

The Draft PEIS concludes that there will likely be less than significant impacts on transportation despite acknowledging an anticipated increase in heavy trucks, personal vehicles, rail shipments, trains, and barge transport that will contribute to traffic delays and congestion.[47] Given that many areas being considered for potential green hydrogen projects are already experiencing heavy traffic due to other industrial operations,[48] any transportation analysis must consider the ways green hydrogen projects could compound existing conditions. The Final PEIS should include a general framework for assessing transportation impacts, which can be done without getting into a more site specific analysis.

The PEIS also states that transportation of hydrogen is outside the scope of the document despite this technical challenge being at the core of many environmental justice concerns. The PEIS must include hydrogen transport to facilities in Washington as part of its program level impact assessment, because leaving this analysis to the individual project level could result in inconsistent and inadequate consideration of cumulative risk. For example, many of the risks associated with leaks occur at the transport phase of production due to hydrogen’s light and flammable characteristics.[49] Hydrogen must also be compressed to be stored in vehicle tanks,

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[45] *Drought and Climate Change in Idaho, Oregon, and Washington*, U.S. Department of Agriculture, https://www.climatehubs.usda.gov/hubs/northwest/topic/drought-and-climate-change-idaho-oregon-and-washington (last visited Jan. 16, 2025).

[46] *Water Resources Mission Area - Thermoelectric Power Water Use*, United States Geological Survey, https://www.usgs.gov/mission-areas/water-resources/science/thermoelectric-power-water-use (last visited Jan. 15, 2025).

[47] Draft PEIS at 196.

[48] Areas within the geographic scope of the Draft PEIS include Spokane, Olympia, Tacoma, South Seattle, Vancouver, and Kennewick, all of which have a 7 or higher on the WA EHD map for the “Proximity to Heavy Traffic Roadways” environmental exposure indicator. *See WA Environmental Health Disparities Map*.

[49] Aurelien Bigo, *Hydrogen in transport: everything you need to know in 10 questions*, Polytechnique Insights,

which is an energy-intensive process.[50] The true risks associated with transportation cannot be fully accounted for without determining how far hydrogen must be transported to project sites in the state. Vehicle and tank size used for transport is highly dependent on transportation time frame, which will also impact strain on local infrastructure, which further proves the need to account for these potential scenarios at the PEIS level.[51] If green hydrogen projects are built in overburdened communities, increased use of and development of existing transportation infrastructure would increase the likelihood of disproportionate impacts on communities who are already experiencing environmental harms from living near heavy transportation corridors. This type of broader analysis must occur at the programmatic level to identify potential cumulative risks for overburdened communities.

V. Climate and warming impacts stemming from hydrogen leaks must be included in GHG emission evaluations.

The PEIS' assessment of GHG emissions only considers emissions from direct production. An accurate analysis of potential climate impacts stemming from green hydrogen production and operation must include leakage scenarios in addition to direct emissions. Leaks are highly variable and can occur at all stages of the hydrogen life cycle, the warming impacts of which could be significant.[52] Industry related green hydrogen leakage estimates can range from 0.48% to 10.62%[53] and in some scenarios, leakage can result in exceedances of the Department of Energy's guidance on clean hydrogen with an established target of 4.0 kgCO2e/kgH2 for life cycle emissions.[54] While total emissions will be project-specific and dependent on factors such as production energy sources and mitigation technologies, an assessment of potential impacts even at a "broad level"[55] must include a more robust analysis of climate impacts to avoid minimizing the severity of potential risks.

The Draft PEIS accurately states that hydrogen is included in GHG emission evaluations despite it not being a GHG itself due to its warming impacts.[56] However, none of the potential warming processes associated with hydrogen leaks are explained and it is unclear how potential reactions are accounted for in the impact analysis for any of the production processes or associated activities despite these interactions accounting for a substantial portion of hydrogen's total warming impact.[57] Hydrogen reacts with hydroxyl radicals which increases atmospheric

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https://www.polytechnique-insights.com/en/columns/energy/hydrogen-in-transport-everything-to-know-in-10-questions/#:~:text=As%20this%20gas%20is%20particularly,that%20make%20vehicles%20very%20heavy (Nov. 16, 2022).

[50] *Id.*

[51] *Id.*

[52] Arjun Makhijani, Ph.D. & Thom Hersbach, Ph.D., Hydrogen: What Good Is It? A Technical Exploration o□ the Potential o□ Hydrogen to Contribute to a Decarbonized Energy System (2024) at 15.

[53] *Id.* at 43.

[54] U.S. Department o□ Energy, U.S. Department o□ Energy Clean Hydrogen Production Standard (CHPS) Guidance (2023); *Id.*

[55] Dra□t PEIS at 4.

[56] *Id.* at 90.

[57] Makhijani & Hersbach, What Good is Hydrogen? at 14.

methane concentrations, tropospheric ozone, and stratospheric water vapor. So while hydrogen emissions alone do not have a warming impact, leaks can lead to increased warming through how hydrogen interacts with other common gasses in the air.

VI. The cumulative impacts analysis should be more integrated in the PEIS to better identify and assess potential harms to overburdened communities.

The Draft PEIS takes a siloed approach to assessing cumulative impacts that limits how risks and impacts are assessed by topic. For example, the cumulative impacts assessment lists reasonably foreseeable future actions (RFFAs) and considers them by looking at each impacted resource.[58] Cumulative impacts to public services and utilities will likely increase, but earlier in the PEIS it states that green hydrogen facilities would "likely result in less than significant impacts on public services and utilities."[59] By not integrating consideration of cumulative impacts into the greater analysis, discrepancies in identified impacts and findings of whether these impacts will likely be significant are less accurate and can lead to greater harms.

The cumulative impacts assessment also results in findings that are so broad that it will be difficult to meaningfully incorporate them into project specific assessments. When assessing potential cumulative impacts for water resources, a whole range of issues including spill of hazardous materials, ground disturbance, decrease in floodplain function, risk to habitat and wildlife projects, drought conditions, and water scarcity are listed.[60] Despite these being serious risks that would impact most facets of life for nearby communities and ecosystems, the section concludes by stating that "cumulative impacts to water resources from green hydrogen facilities and other RFFAs may increase or decrease, depending on the size, type, and number of activities within a given area."[61] While specific conclusions for each project cannot be determined at this stage of analysis, it is almost certain that cumulative impacts in an area will increase based on both RFFAs and highlighted impacts. A key finding of "impacts that range from less than significant to potentially significant" is similarly broad and leaves this crucial analysis, upon which many of the potential mitigation measures implemented hinges upon, to the discretion of individual project managers and local jurisdictions.

Assessing potential impacts for green hydrogen projects can only be done by considering the greater context of existing conditions. This can be done in a generalized way without getting into a site-specific analysis by being realistic about the ways impacts that have already been identified in the Draft PEIS would affect surrounding communities. Drawing clearer conclusions about the scale of potential impacts is not only more protective of frontline and overburdened communities, but would also benefit local jurisdictions by allowing for more impactful mitigation measures to be assessed on a project level.

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[58] Draft PEIS at 218.
[59] Draft PEIS at 102, 232.
[60] *Id.* at 225.
[61] *Id.*

VII. Conclusion

When environmental justice principles and community leadership are at the core of decisions made throughout the entire hydrogen supply chain, including production, storage, transportation, and utilization of hydrogen, there is potential for positive local impacts and technological advances in energy generation that are necessary to achieve a carbon-free energy future. Washington state has been a national leader of environmental justice through groundbreaking initiatives like the Clean Energy Transformation Act and the Healthy Environment for All Act and has the opportunity to build upon this legacy by creating equitable and comprehensive frameworks for green hydrogen implementation.

Since the impacts of green hydrogen are highly dependent on production methods, inputs, and end uses,[62] the programmatic level assessment of risks must include a high-level analysis of the entire supply chain. Failure to do so can perpetuate and even exacerbate existing harm in overburdened communities caused by exploitative resource extraction methods that prioritize capital gain over climate justice and public health. In order to fully experience the emerging benefits of green hydrogen, the PEIS should include a more robust analysis of potential impacts related to: (1) local pollution impacts including wastewater and air quality, (2) the potential burden on natural resources and public utilities with a focus on energy affordability, additionality, and water scarcity, (3) inequitable transportation impacts, (4) climate impacts from different warming scenarios, and (5) develop a more holistic and integrated cumulative impacts analysis.

We appreciate the opportunity to provide comments. Please do not hesitate to contact us if you have any questions.

Sincerely,

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[62] *Hydrogen Energy: A Critical Review to Community and Climate Benefits*, Just Solutions, https://justsolutionscollective.org/our-work/hydrogen-ej-framework/ (last visited Feb. 3, 2025).