

## Documentation of GHG Reduction Assumptions

### GHG Reduction Estimate Method

#### Benchmark Assessment

In the absence of awarded projects, the Coalition bases its estimate of cumulative emissions reductions of the Rocky Mountain H2 grant program on the proposed reductions in the WISHH US. DOE application<sup>1</sup> as a benchmark. This was a joint application submitted by Colorado, Wyoming, New Mexico and Utah. The projected emissions reductions for that four state proposal was approximately 14,000 tons/day GHG reductions which equates to 5.1 MMT/yr. In that proposal, it was estimated to take several years to develop the infrastructure to full productivity, so significant emissions reductions would begin around 2030. Once there, emissions reductions in a timeline similar to 2030- 2050 were estimated to be 5.1MMT/yr. During the ramp up period to that rate, a minimal amount of GHG emissions reductions would take place during a timeline similar in length to 2025 to 2030.

Continuing with the benchmark scenario, it would take several years to develop the clean hydrogen infrastructure, so the bulk of emissions reductions would occur after 2030, but would continue past 2050. Thus, from 2030-2050, the total emissions reductions would be approximately 5.1MMTCO<sub>2</sub>e/yr times 20 years equalling 100 MMT. The WISHH application requested \$1.25 billion, and leveraged \$9.1 billion in projected private sector investment. Thus the projected emissions reductions per dollar expended would be \$10.35 billion/100 MMT, or \$103.5/MMTCO<sub>2</sub>e (although they reduce over time as emissions reductions accumulate). With \$400 million in federal investment, plus an additional \$400 million in private sector cost share, there is \$800 million being invested through this proposal. Cumulative emission reductions and funds spent are shown below.

	<b>emissions reductions (MTCO<sub>2</sub>e)</b>	<b>CPRG \$ spent</b>	<b>TOTAL \$ spend</b>	<b>CPRG \$/MtCO<sub>2</sub>e</b>
2025		\$1,382,401	\$1,382,401	n/a
2026		\$402,753,741	\$802,753,741	n/a
2027		\$404,157,581	\$804,157,581	n/a
2028		\$405,595,512	\$805,595,512	n/a
2029	3,933,029	\$407,068,533	\$807,068,533	\$104
2030	7,866,059	\$407,068,533	\$807,068,533	\$52
2031	15,732,117	\$407,068,533	\$807,068,533	\$26
2032	23,598,176	\$407,068,533	\$807,068,533	\$17
2033	31,464,234	\$407,068,533	\$807,068,533	\$13

<sup>1</sup> The WISHH application contains confidential business information and cannot be shared. However the redacted concept paper maybe found here: <https://wyoenergy.org/wp-content/uploads/2022/12/concept-paper.pdf>

2034	39,330,293	\$407,068,533	\$807,068,533	\$10
2035	47,196,352	\$407,068,533	\$807,068,533	\$9
2036	55,062,410	\$407,068,533	\$807,068,533	\$7
2037	62,928,469	\$407,068,533	\$807,068,533	\$6
2038	70,794,527	\$407,068,533	\$807,068,533	\$6
2039	78,660,586	\$407,068,533	\$807,068,533	\$5
2040	86,526,645	\$407,068,533	\$807,068,533	\$5
2041	94,392,703	\$407,068,533	\$807,068,533	\$4
2042	102,258,762	\$407,068,533	\$807,068,533	\$4
2043	110,124,820	\$407,068,533	\$807,068,533	\$4
2044	117,990,879	\$407,068,533	\$807,068,533	\$3
2045	125,856,938	\$407,068,533	\$807,068,533	\$3
2046	133,722,996	\$407,068,533	\$807,068,533	\$3
2047	141,589,055	\$407,068,533	\$807,068,533	\$3
2048	149,455,113	\$407,068,533	\$807,068,533	\$3
2049	157,321,172	\$407,068,533	\$807,068,533	\$3
2050	165,187,231	\$407,068,533	\$807,068,533	\$2

Applicants and awardees of the Rocky Mountain H2 Coalition grant program will be required to submit emissions assessments carried out using the Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model developed provided by DOE's Office of Energy Efficiency and Renewable Energy (EERE). Applicants and awardees will also be required to submit estimates of overall GHG reductions caused by the proposed project by comparing the GREET emissions estimates with baseline sector and technology-specific emissions forecasts supplied by the applicants. Applications will be judged in part based on how reasonable, justifiable, and durable the emissions reduction claims are. Estimates submitted by awardees will be verified by a third party technical consultant.

## Models and Tools Used

All awardees will be required to track emissions reductions tied to CPRG funding from the project outset. Methods used for determining life cycle emissions will be the GREET models developed provided by DOE's Office of Energy Efficiency and Renewable Energy (EERE). It is expected that the 45VH2-GREET version of this tool will be utilized. Other methodologies may be considered with adequate justification

but would need to meet the approval of the Coalition Lead and EPA. Estimates and accounting submitted by awardees will be verified by a third party technical consultant.

### Measure Implementation Assumptions

Applicants to the Rocky Mountain H2 Coalition will be required to provide data regarding implementation of their proposed measures and a third party technical consultant will verify their accuracy. Applications will be required to contain the following data and justification for these assumptions at a minimum: measure lifetime, capital cost estimates, ongoing operation and maintenance costs.

### GHG Reduction Estimate Assumptions

Emissions reduction estimates provided by applicants and awardees will be arrived at through the use of the GREET tool and its assumptions, which will be accepted by the Coalition. If an applicant or awardee proposes the use of an alternate pathway or assumption(s) they will need to provide justification that can be reasonably verified in the timeframe (this determination will be based on technical accuracy, level of effort, at a minimum) by the Coalition's third party consultant and approved by the Coalition Lead.

### Reference Case Scenario

In order to allow applicants the widest freedom in what types of measures may be submitted to the Rocky Mountain H2 Coalition grant program, the application process will not prescribe a particular set of reference scenarios for emissions for particular measures. Instead, applicants will be required to submit their own reference scenario for emissions over the lifetime of their proposed project as a comparison point for emissions reductions caused by the proposal. Applications will be assessed, in part, based on the rigor, reasonableness, and justifiability of the baseline emissions comparison they offer as part of the application.