

Shadow Wolf Energy (Shadow Wolf Energy LLC)

March 7, 2026

California Air Resources Board
1001 I Street
Sacramento, CA 95814
Submitted via:

Re: Public Comment on Proposed Amendments to the California Cap-and-Invest Regulation – 45-Day Notice Period (March 9, 2026 Deadline)

Dear Members of the California Air Resources Board:

Shadow Wolf Energy ("Shadow Wolf") submits these comments in response to the California Air Resources Board's (CARB) proposed amendments to the Cap-and-Invest Regulation, published for the formal comment period ending March 9, 2026. Shadow Wolf operates a thermal enhanced oil recovery (EOR) facility in Southern California and is a covered entity under California's Cap-and-Invest program. We appreciate CARB's commitment to strengthening the program through 2045 and write to raise two specific concerns where we believe the proposed amendments, as currently written, will produce inequitable and counterproductive outcomes for our operations and for the program's stated decarbonization goals.

I. The Proposed Consolidation of Thermal and Non-Thermal EOR Benchmarks Into a Single Crude Oil Extraction Benchmark Is Technically Unjustified and Will Inequitably Penalize Thermal EOR Operations

CARB's proposed amendments would replace the existing separate benchmarks for thermal and non-thermal crude oil extraction with a single consolidated benchmark of 0.0463 allowances per barrel of oil equivalent (BOE), effective Vintage Year 2031. Shadow Wolf respectfully opposes this consolidation and urges CARB to retain distinct benchmarks that reflect the materially different carbon intensities of thermal and non-thermal EOR operations.

Thermal EOR operations, by their very nature, require the combustion of fuel – typically associated gas – to generate the steam that is injected into the reservoir to mobilize heavy crude oil. This steam generation process is not a product of operational inefficiency; it is a physical requirement of the extraction method itself. The emissions associated with thermal steam generation are therefore structurally and inherently higher per BOE produced than those of non-thermal operations, which do not require this combustion process. A single blended benchmark fails to account for this fundamental difference in process emissions.

Shadow Wolf is among the last remaining large-scale thermal EOR operators in Southern California. The broader California crude oil extraction sector has shifted substantially toward non-thermal production methods. As a result, a sector-wide blended benchmark will be weighted heavily toward non-thermal carbon intensity levels, and applying that benchmark to a facility whose process emissions are inherently higher due to steam generation will systematically under allocate allowances to Shadow Wolf relative to our actual operational emissions profile.

Shadow Wolf's operational history demonstrates that the combustion-related emissions associated with thermal steam generation represent a significant and consistent component of our overall emissions profile – one that is directly tied to the physics of heavy crude oil extraction and cannot meaningfully be compared to the emissions profile of non-thermal

operations. This distinction is precisely what the separate thermal and non-thermal benchmarks in the current regulation were designed to reflect.

These figures reflect the operational reality of a thermal EOR facility. The steam generation process that drives this carbon intensity is not discretionary – it is what allows heavy crude oil to be economically recovered from the reservoir. Assigning Shadow Wolf the same per-BOE benchmark as a non-thermal operator that does not undertake this process places an unequal compliance burden on our facility and is inconsistent with the program’s design principle of calibrating allocations to reflect actual production processes.

Shadow Wolf respectfully requests that CARB retain separate benchmarks for thermal and non-thermal crude oil extraction operations in Vintage Year 2031 and beyond, or alternatively, that CARB provide a technical justification demonstrating that the proposed blended benchmark appropriately reflects the carbon intensity of remaining thermal EOR operations in California. If CARB proceeds with consolidation, we request that it conduct a formal analysis of the impact on thermal EOR operators prior to adoption.

II. The Categorical Exclusion of Crude Oil and Gas Extraction from the Proposed Manufacturing Decarbonization Incentive Is Inconsistent with the Program’s Stated Goals

CARB’s proposed amendments introduce a Manufacturing Decarbonization Incentive that would provide covered entities with additional allocations in recognition of qualifying decarbonization investments, including electrification of emission units and other capital projects that reduce greenhouse gas emissions. Shadow Wolf strongly supports the principle of this incentive. However, CARB has affirmatively designated crude petroleum and natural gas extraction (NAICS 211111) as categorically ineligible for this incentive under Table 9-1a of the proposed regulation order (Appendix A-1), without providing a technical or policy justification for this exclusion in the Initial Statement of Reasons.

We respectfully urge CARB to reconsider this exclusion. There is no principled basis for categorically denying decarbonization incentives to an entire industrial sector. The underlying logic of the incentive – that covered entities should receive credit for capital investment that reduces emissions – applies equally to crude oil and gas extraction operations as to any other covered sector. A facility that electrifies emission units, deploys carbon capture, or otherwise invests capital in demonstrated emissions reduction projects should be eligible for recognition under this program, regardless of its industry classification.

Shadow Wolf notes that the program faces a 20-year horizon over which covered entities will need to invest significantly in emissions reduction to meet the program’s statutory goals under AB 1207 and SB 840. Excluding an entire sector from any incentive for decarbonization investment signals to that sector that there is no pathway to compliance credit through capital investment – a disincentive that undermines the program’s own objectives. If the intent of the Manufacturing Decarbonization Incentive is to accelerate emissions reduction across covered industries, that intent is best served by broad eligibility, not categorical exclusions.

Shadow Wolf requests that CARB either remove the categorical exclusion of crude oil and gas extraction from the Manufacturing Decarbonization Incentive, or provide a specific technical and policy justification for the exclusion that can be evaluated during the public comment process.

Shadow Wolf appreciates the opportunity to participate in this rulemaking process and the Board’s commitment to a program that supports California’s long-term climate goals. We respectfully urge CARB to carefully consider the operational realities of thermal EOR operations

and the equitable application of program incentives across all covered sectors before finalizing these amendments.

Respectfully submitted,

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