January 3, 2024

PR FOR H2:
OVERVIEW

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WHAT DID WE GET?

• **Proposed** Regulations for Code Section 45V
  • Generally effective post-2022
  • Applies to materials the manufacturing of which began pre-2023, but must complete and sell after 2022
• Final Regulations...
  • Overlap?
  • New stuff??
  • When will they be out???
WHAT IS CODE SECTION 45V?

Per-kg tax credit for
the person who produces (in the U.S.)
hydrogen (with sufficiently low CO2e)
at a qualified facility
(primarily) for sale or use
LET’S DO THE NUMBERS

• Find the CO2e score for each kilogram produced during the year
  • If you use EACs, apply annually through 2027, then hourly
• Find the average CO2e score per kilogram
• Match to the table:

<table>
<thead>
<tr>
<th>CO2e Score</th>
<th>Base Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5kg CO2e/kg H2 to 4kg CO2e/kg H2</td>
<td>$0.12/kg</td>
</tr>
<tr>
<td>1.5 to less than 2.5</td>
<td>$0.15/kg</td>
</tr>
<tr>
<td>0.45 to less than 1.5</td>
<td>$0.20/kg</td>
</tr>
<tr>
<td>Less than 0.45</td>
<td>$0.60/kg</td>
</tr>
</tbody>
</table>

• Adjust for inflation after 2022
• Multiply by 5 for wage/apprenticeship compliance
• If ITC conversion, add domestic content and/or energy communities (maybe)
THE PERSON WHO PRODUCES

• Owner (of H2) operated
• Contract manufacturing/tolling
• Production must occur in the United States
HYDROGEN (WITH SUFFICIENTLY LOW CO2E)

• Focus is on emissions to achieve H2, not molecules after H2
• A third party must validate amount and CO2e score of H2 produced
• Must use the “most recent” 45V H2 GREET model, i.e., as of day one of each tax year (may change if 45V H2 GREET subsequently changes that year)
• Baseline v. three pillars
  • Incrementality/time
  • Geography
HYDROGEN (WITH SUFFICIENTLY LOW CO2E)

• Pathways
  • Gaseous fuel: NG, LFG (RNG? Fugitive methane?)
  • Gasification: coal, biomass (w/ corn stover & logging residue with no significant market value)
  • Water Electrolysis: low-temp using electricity, high-temp using electricity and potential heat from nuclear power plants
• PER

• Inputs
  • Well-to-gate (and CCS?)
  • Fixed assumptions (background data)
  • Changeable inputs (foreground data)
    • Valorized co-products
HYDROGEN (WITH SUFFICIENTLY LOW CO2E)

- Offsets
  - Energy (electricity) Attribute Certificates
    - Must be registered (always)
    - No double counting; must be retired
    - Must be verified by a third party
  - Incrementality: Must be from a generation facility that CODs within 36 months prior to H2 facility PIS date
  - Deliverability: Generation facility must be within same NERC transmission needs study area
  - Temporal matching?
    - Hourly default; annual through 2027
      - What to do with batteries?
    - Uprated production
      - Pro rated to each hour or year
      - What about the 80/20 test?
EAC AREAS
WORDS OF ADVICE FOR MINIMAL EMITTERS

• Minimal emitters:
  • 45V H2 GREET Background Data (kg CO2e/kWhe)
    • Minimals: Nuclear (0.0028), hydroelectric (0), wind (0), solar (0)
    • Natural gas (0.54),
  • Avoided Retirement (“Upcycling for H2”)
    • Minimal emissions projects that are “likely to avoid retirement”
      if selling electrons or EACs for H2 production
  • Minimal Induced Emissions (“The Washington Solution”)
    • Modeling (curtailment, already clean)
    • State/local requirements
    • BTM/Islanded generation
  • Formulaic approach (“The 5% Freebie”)
    • 5% of all hourly generation by minimal emitters is incremental
AT A QUALIFIED FACILITY

- H2 production facility placed in service after 2022
- No 45Q (CCS) claimed on facility
  - Can restart the clock for conflict by updating CCS equipment (80/20 rule for CCS)
- Retrofitted H2 facility (new 10-year clock)
  - 80/20 rule
  - Applies to any existing facility regardless of PIS or previous production of clean H2
- Hydrogen facility may be modified (new 10-year clock) (SMR+CCS)
  - Must be capitalized cost
  - Must be for the purpose of enabling the facility to produce less than 4 kg CO2e H2 (+CCS)
  - Not mere change in feedstock
(PRIMARILY) FOR SALE OR USE

• Primarily
  • No waste!
    • Vented, flared, used to produce H2
    • Cost < credit?
  • No windfalls?
  • Sale or use can occur anywhere, as long as its verified
  • Use can be by anyone, including producer or toll service recipient
ITC CONVERSION

• Election in PIS year for facility (see 80/20 rule)
• Credit based on expected CO2e score
• Recapture, of a sort
  • Must verify and report for each of five years after PIS
  • GHGs too high: 20% of difference between rate claimed and qualified rate
  • No report, GHGs over 4.0 kg CO2e / kg H2: 20% of rate claimed
WHAT NOW?

• Can still get involved
• Comment through February 26, 2024
  • Be mindful of specific requests for comments
• Public hearing March 25, 2024 (request and outline due by March 4, 2024)
• Comment independently and through trade associations
• Chevron deference
THANK YOU

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