

Paving the Way to a Hydrogen Economy II: Tax Incentives for Hydrogen Production and Storage

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Audience Question:

- **What are the prospects for enactment of a robust hydrogen production tax credit in 2022?**

I would describe the prospects as . . .	Percentage Chance
A. Slam dunk	76% - 100%
B. Feelin' good about it	51% - 75%
C. Meh	20% - 50%
D. When pigs fly	0% - 19%

Hydrogen Tax Incentives - Existing

- **Qualified Fuel Cell Property.** Section 48 investment tax credit (ITC). Maximum of \$1500 for each .5kW of capacity.
- **Advanced Energy Project Credit.** Section 48C (but all credits have been allocated).
- **Residential Fuel Cells Credit.** Section 25D. Capped at \$500/.5kW of capacity.
- **Carbon Capture and Sequestration.** Section 45Q. Not a hydrogen tax credit *per se* but potentially applicable to the production of blue hydrogen.
- **Alternative fuel vehicle** purchase credit (\$8000) and refueling property (30% ITC but capped at \$30,000). Sections 30B and 30C.
- **Alternative fuel credit** against fuel excise taxes under sections 6426 and 6427 (applies to liquid hydrogen fuel).

Note: the recently-enacted **Infrastructure Investment and Jobs Act** contains **no new tax incentives** related to hydrogen but authorized \$9.5 billion in funding for clean hydrogen programs, such as hubs and R&D.

Hydrogen Tax Incentives – Proposed

The Build Back Better Act would enact tax credits to incentivize low-carbon hydrogen projects, including:

- **Production Tax Credit (PTC)** – new section 45W
- **Investment Tax Credit (ITC)** – alternative to PTC for hydrogen facilities
- **ITC for Hydrogen Storage** – new 48(c)(6) for property that receives, stores or delivers energy for conversion to electricity (or, in the case of hydrogen, which stores energy) having a minimum capacity of 5 kWhs.
- **Energy Tax Credit for Fuel Cells** – extended, expanded
- **Advanced Energy Project Credit** – section 48C – allocation of \$5b. in credits
- **Purchase credits for Fuel Cell Vehicles** and enhancement of ITC for refueling property
- **Repeal of alternative fuel credit** against fuel excise tax in section 6426.
- **Carbon capture and sequestration credit (45Q)** – increased, extended
- **Direct pay election would be available for PTC, ITC, 45Q**

Proposed Hydrogen PTC – Section 45W

- Production Tax Credit (PTC). A dollar amount of credit per kilogram of low-carbon hydrogen produced.
- No limit on amount; applies for 10 years
- Credit amount depends upon extent of CO2 emissions in connection with production:

Credit Value (\$ per kg of H2) if prevailing wage/apprenticeship reqs met	Kg of CO2 per kg of H2	
\$3.00	0 - .45 kg CO2	Likely only green hydrogen would satisfy this
\$1.00	0.45 – 1.5 kg CO2	Blue hydrogen might satisfy
\$0.75	1.5 - 2.5 kg CO2	
\$0.60	2.5 - 4 kg CO2	
\$0.45	4 – 6 kg CO2	

How are CO2 emissions determined for PTC?

- CO2 emissions in connection with a hydrogen production process are to be determined using the **REET model**.
- Argonne National Laboratory Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (“REET”) model.
- There are questions about application of the REET model for this purpose:
 - Indirect emissions count? REET 1 Series Model, 2020 release, would not count indirect emissions – consider specifying
 - Carbon sequestration: how tied (geographically, economically, contractually) must sequestration be to hydrogen facility?

Additional features of PTC calculation

- **Labor and apprenticeship multiplier** –
 - Multiply basic amount of credit (e.g., 60 cents) by 5 if wages paid for construction are not less than prevailing rates and specified percentage of total construction hours are performed by apprentices.
- **Tax-exempt bond reduction**
 - Credit reduced by a fraction that is the lesser of 50% or the percentage of capital expenditures funded by tax-exempt bonds or government grants

Hydrogen tax – technical issues

- **Coordination** between credits
 - **PTC (45W) and ITC (48)?** Elect between PTC or ITC for hydrogen facility; ITC would be reduced same as PTC to extent of carbon emissions
 - **PTC (45W) and 45Q?** BBB would prohibit 45W if 45Q claimed
 - **PTC (45W) and either PTC(45) or ITC(48)** for renewable energy source used by hydrogen facility? BBB would clarify 45 for renewable energy available as sale to non-related party. No prohibition on ITC for renewable energy source.

Hydrogen tax – technical issues (cont'd)

Existing facilities – can they be retrofit or modified to produce qualified clean hydrogen and thereby be considered newly placed in service in order to obtain the new PTC? Section 48W(d)(4) would allow.

Can **RECs** and other environmental attributes be used to satisfy environmental performance requirements? E.g., if a hydrogen facility purchases a renewable energy credit (“REC”) from a non-co-located wind farm, can that REC be used to satisfy 45W emissions standards?

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