

The Inflation Reduction Act and Its Impact on Fuel Cell Companies: A Financial and Market Analysis

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The Inflation Reduction Act (IRA), enacted in August 2022, aimed to accelerate the adoption of clean energy through substantial tax credits and incentives for hydrogen production and fuel cell technologies. This paper evaluates the financial performance and stock price trends of three leading U.S. fuel cell firms, Plug Power Inc., Bloom Energy Corp., and FuelCell Energy Inc., to assess whether IRA incentives improved stability and investor sentiment. Despite the Section 45V Clean Hydrogen Production Tax Credit and extended Investment Tax Credit (ITC), long-term profitability remains out of reach. Plug Power's revenue declined 29.5% from 2023 to 2024, while FuelCell Energy's net losses widened by 45%. Bloom Energy fared better with tighter cost controls and lower debt, yet remains unprofitable. Stock analysis shows early optimism gave way to skepticism as losses mounted: Plug Power's share price collapsed from \$30 to below \$3, FuelCell Energy followed suit, and Bloom Energy's decline was less severe. The findings suggest IRA incentives alone cannot secure industry success; operational discipline, efficient cost structures, and revenue growth remain essential for sustaining investor confidence.

Keywords: inflation reduction act, clean energy, financial analysis, market analysis, regression

INTRODUCTION

As the effects of climate change become more pronounced, governments worldwide have taken significant steps to transition away from fossil fuels toward more sustainable energy sources. In the United States, the Biden administration rejoined the Paris Climate Agreement, committing to efforts aimed at limiting global temperature rise to 1.5°C above pre-industrial levels (United Nations, n.d.). Furthermore, to accelerate the transition to clean energy, the U.S. enacted the Inflation Reduction Act (IRA) into law in August 2022 (U.S. Department of the Treasury, 2023). This landmark legislation introduces financial incentives to encourage investment in and adoption of renewable energy sources. These include tax credits of up to 30% for businesses that invest in or produce clean energy, as well as residential incentives for homeowners who adopt renewable energy technologies. Additionally, the IRA establishes loan programs designed to facilitate the retooling and replacement of aging energy infrastructure, ensuring that the transition to clean energy is both economically viable and widely accessible (U.S. Department of Energy, n.d.). The law also provides rebates and direct subsidies to consumers who choose to power their homes with renewable energy sources (California Energy Commission, n.d.).

The adoption of renewable energy technologies has historically faced numerous challenges, particularly political, financial, and economic risks (Wang, 2022). Political risks are among the most significant barriers, as renewable energy industries are highly dependent on government policies, incentives, and long-term

regulatory frameworks. Policy uncertainty, shifting government regulations, and the potential rollback of renewable energy subsidies in future administrations create instability in investment planning. For example, inconsistent subsidy programs or abrupt policy reversals can lead to stranded assets and financial losses for investors in clean energy projects (Sovacool, 2009). In some cases, geopolitical tensions and lobbying efforts by fossil fuel industries have further complicated the development of stable, long-term renewable energy policies (Overland, 2019).

Financial risks remain a central concern, as renewable energy projects often require substantial upfront capital investment. Unlike conventional fossil fuel-based energy sources, which benefit from decades of infrastructure development and established financial mechanisms, renewable energy projects —such as solar, wind, and hydrogen fuel cell initiatives —demand high initial costs for research, production, and installation (IRENA, 2019). In particular, hydrogen fuel cells require advanced technology and significant infrastructure development, which increases the capital burden on companies in the sector. Furthermore, the availability of financing for such projects is often constrained by uncertainties regarding return on investment, making it difficult for smaller firms to secure funding without government backing or private-sector incentives (Polzin, 2015).

Economic risks also play a crucial role in determining the viability of renewable energy adoption. Market volatility, fluctuating energy prices, and demand uncertainty can impact profitability, particularly when competing with well-established fossil fuel industries that benefit from lower production costs and mature supply chains (Sensfuß, 2008). Renewable energy producers must navigate price fluctuations resulting from variations in supply and demand, commodity price fluctuations, and global energy trends. Additionally, integrating renewable sources like solar and wind energy into existing power grids presents further economic challenges, as these sources depend on variable weather conditions, requiring energy storage solutions or hybrid grid systems to ensure reliability (Denholm, 2020).

Despite these challenges, advancements in policy frameworks, technological innovations, and financial mechanisms continue to support the gradual shift toward renewable energy. Governments worldwide are developing more robust regulatory frameworks to mitigate policy risks, while private-sector investments in green technologies are helping reduce financial constraints. As the renewable energy sector matures, companies and investors must balance these risks with long-term sustainability goals and evolving market opportunities (Jacobson, 2017).

Among the technologies positioned to benefit from IRA incentives are hydrogen fuel cells (HFCs). HFCs produce electricity through water electrolysis, a process in which hydrogen molecules ionize at the fuel cell's anode, releasing protons and electrons. The protons pass through an electrolyte membrane, while electrons travel through an external circuit, generating an electric current. At the cathode, oxygen combines with hydrogen protons and electrons, forming water as a byproduct, along with heat (Singla, 2021). This process results in zero greenhouse gas emissions, making HFCs an attractive alternative to conventional fossil fuels. Additionally, HFCs can provide small amounts of power for longer periods of time compared to batteries and supercapacitors, making them suitable for diverse applications in transportation, industrial power generation, and grid storage (Townsend, 2021).

Given these advantages, hydrogen fuel cell companies are well-positioned to benefit significantly from the IRA's tax incentives and subsidies. However, the financial health and market performance of companies in the hydrogen fuel cell sector ultimately depend on their ability to capitalize on these incentives while maintaining operational efficiency, cost control, and sustainable profitability. This paper examines whether fuel cell companies have successfully leveraged the IRA's incentives to improve financial performance and investor confidence, focusing on key players such as Plug Power, Bloom Energy, and FuelCell Energy.

REGRESSION ANALYSIS OF HISTORICAL STOCK PRICE AND FINANCIAL STATEMENTS

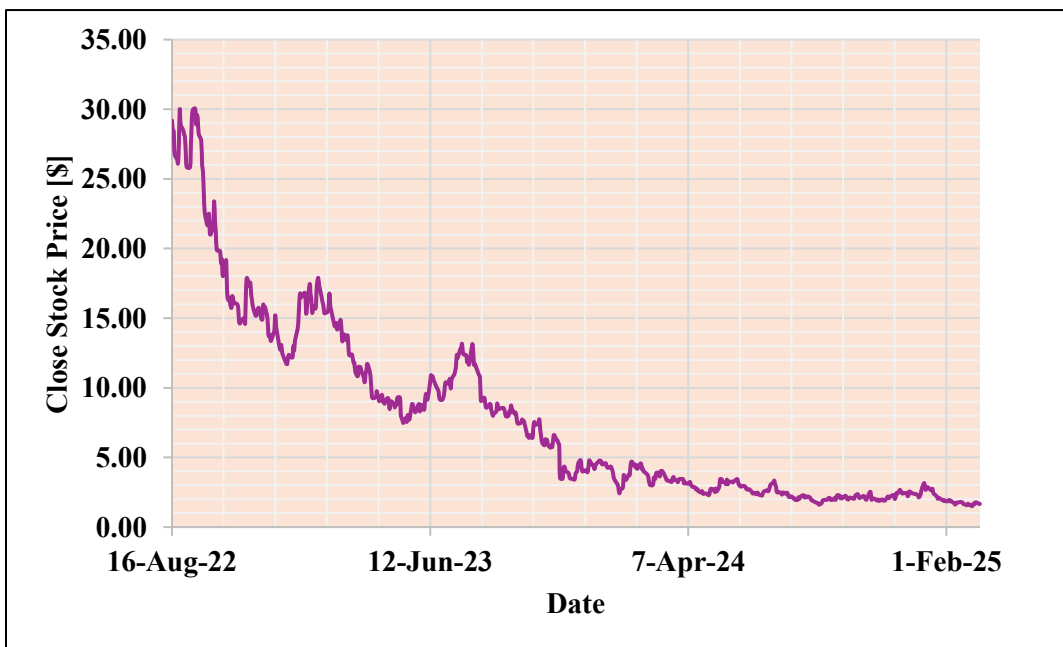
Plug Power Inc.

Founded in 1997, Plug Power Inc. is a publicly traded company specializing in fuel cell technology, with over 3,400 employees worldwide. The company has developed solutions to dispensing gaseous and liquid hydrogen through cutting-edge designed infrastructure and fueling stations (Plug Power, 2024). As

such, the company appears poised to fully leverage the tax credits for hydrogen production and fuel cell technology development provided by the IRA (U.S. Department of the Treasury, 2023). In this section, the financial statements and stock price history of the company are reviewed in-depth, and a regression analysis is carried out to assess the relationship between the stock price, financial statements, and the impact of the IRA on company performance.

Based on the quarterly and annual filings from the company (Plug Power Inc., 2025), Plug Power explicitly discusses the IRA in multiple 10-Q reports, indicating that the company is actively engaging with its incentives. From these filings, the balance sheet reflects significant trends from the end of 2022 to the fall of 2024. In terms of assets, the following is noted: (1) cash and cash equivalents decreased substantially from \$690.6 million at the end of 2022 to \$62.3 million by mid-2024; (2) property, plant, and equipment increased significantly from \$719.8 million at the end of 2022 to approximately \$1.51 billion by mid-2024, which underscores the large investments into expanding capacity and possibly taking advantage of the IRA incentives for renewable energy infrastructure. In terms of liability and equity, the company's accumulated deficit increased noticeably from -\$4.49 billion in December 2023 to -\$5.05 billion in mid-2024, which strongly indicates continuous net losses resulting from heavy capital expenditures, investments, and operating expenses incurred due to the utilization of incentives provided by the IRA. At the same time, the total number of shares increased significantly in order to put the company in a better position to finance expansion or operational deficits.

FIGURE 1
PLUG POWER INC.



Close price of Plug Power Inc. From August 16th, 2022, the day the IRA was enacted, until March 12th, 2025. Share price dropped 94% from a high of \$30.03 on September 12th, 2022.

As shown in **Figure 1**, the closing price of Plug Power Inc. (Plug Power Inc., 2025) decreased significantly from the day the IRA was enacted until the end of the monitoring period of this study on March 12th, 2025. The total price drop equated to a dollar amount of \$28.37 per share, or in terms of percentages, a 94% drop from the closing high price of \$30.03 on September 12th, 2022 to a low of \$1.67 on March 12th, 2025. This drop in price is despite the fact that inventory increased from \$645.6 million in December 2022 to \$939.5 million in June 2024, possibly due to IRA-stimulated demand in sales. Moreover, the considerable growth in property, plant, and equipment, from \$719.8 million to \$1.51 billion, from

December 2022 to June 2024, illustrates the company's increased investments in renewable energy infrastructure, likely motivated by the IRA incentives. However, high operating costs reached $-\$2.02$ billion in 2024, negatively impacting net cash from operating activities, and therefore may have heavily influenced investor confidence in the company, which in turn applied downward pressure on the stock price.

In order to better assess the impact of the IRA on the financial statements and stock price, a multiple linear regression model is used:

$$P_s = \delta_0 + \delta_1 \cdot P_r + \delta_2 \cdot P_l + \delta_3 \cdot P_c \quad (1)$$

where δ_i are the fitting coefficients, P_s is the closing stock price, P_r is the net revenue, P_l is the operating loss, and P_c is the net cash from operating activities. By applying this regression model from **Table 1**, the following relationship between the financial statements and stock price for Plug Power can be found:

$$P_s = 3.9961 + (8.37 \cdot 10^{-5})P_r + (1.01 \cdot 10^{-5})P_l + (3.888 \cdot 10^{-5})P_c \quad (2)$$

where the coefficient of determination $R^2 = 0.694$, indicating that 69.4% of the variance in the stock price is explained by the model. As shown in **Figure 2**, this regression model follows the general trend of the actual stock price data during the monitoring period, with nearly the correlation coefficient $R = 0.833$, providing confidence in the results of the model.

TABLE 1
THE FINANCIAL STATEMENT AND STOCK PRICING DATA GIVEN ON A QUARTERLY BASIS FOR PLUG POWER INC

Quarter_End	Net Revenue	Operating Loss	Net Cash From Operating Activities	Average Quarterly Close
2022 Q1	\$ 140,804	\$ (139,161)	\$ 273,914	\$ 23.83
2022 Q3	\$ 339,894	\$ (306,655)	\$ (312,914)	\$ 23.85
2022 Q4	\$ 220,742	\$ (233,734)	\$ (306,574)	\$ 15.92
2023 Q2	\$ 470,468	\$ (443,641)	\$ (625,011)	\$ 9.10
2023 Q3	\$ 198,711	\$ (273,971)	\$ (238,908)	\$ 9.77
2024 Q1	\$ 120,264	\$ (259,409)	\$ (167,728)	\$ 3.72
2024 Q2	\$ 143,350	\$ (244,673)	\$ (254,738)	\$ 2.86
2024 Q3	\$ 173,730	\$ (216,168)	\$ (174,936)	\$ 2.24
2024 Q4	\$ 191,470	\$ (1,299,594)	\$ (131,241)	\$ 2.18

It is notable that the company incurred a six-figure operating loss in Q4 of 2024.

To better evaluate the output, the F-statistic can be found by the following relationship:

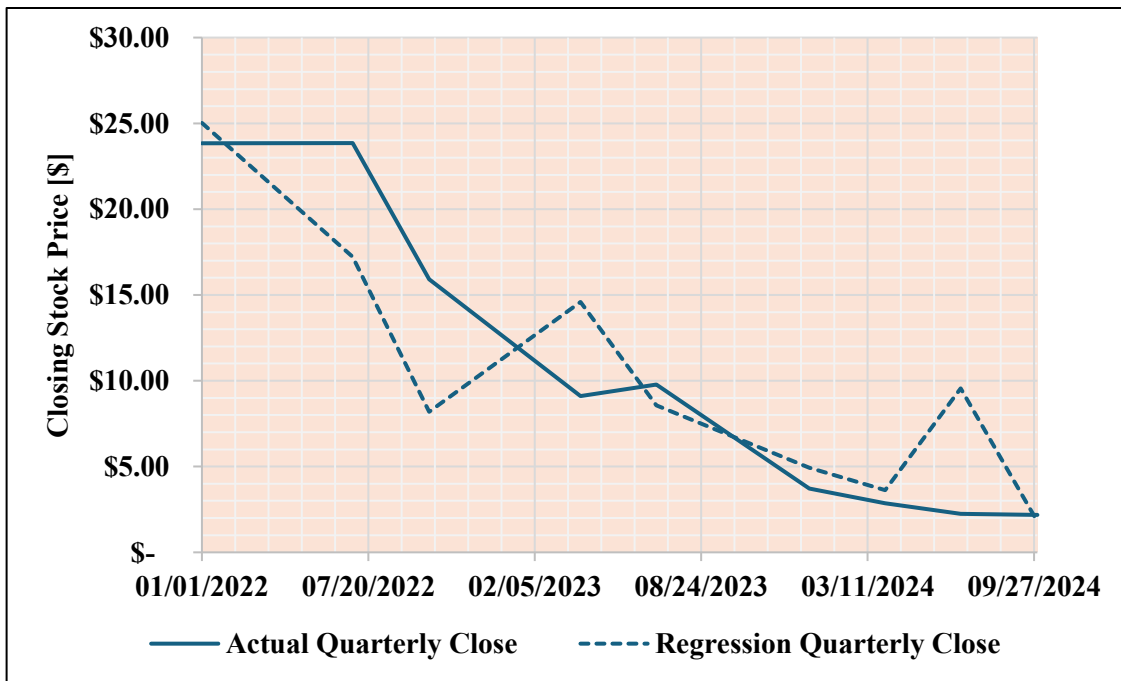
$$F = \frac{\text{Explained Variance}}{\text{Unexplained Variance}} = \frac{\sum_{i=1}^K n_i (\bar{Y}_i - \bar{Y}) / K - 1}{\sum_{i=1}^K \sum_{j=1}^{n_i} (\bar{Y}_{ij} - \bar{Y})^2 / (N - K)} \quad (3)$$

where \bar{Y}_i is the sample mean of the i -th group, n_i is the number of observations in the i -th group, \bar{Y} is the overall mean of the data, K is the number of groups, \bar{Y}_{ij} is the j -th observation in the i -th out of K groups and N is the overall sample size. As such, based on the raw data and regression model, the F-statistic is found to be 3.784 and corresponds to a p-value of 0.0930, meaning the model is marginally significant at the 0.10 level. The following t-statistic relationship can be used to find the statistical significance of each coefficient:

$$t = \frac{\hat{\beta}_j}{SE(\hat{\beta}_j)} \tag{4}$$

where $\hat{\beta}_j$ is the estimated coefficient and $E(\hat{\beta}_j)$ is the standard error of the coefficient. Thus, for the independent variables, the net revenue coefficient δ_1 has a corresponding p-value of 0.035, the operating loss coefficient δ_2 has a p-value of 0.165, and the net cash from operating activities δ_3 has a p-value of 0.040. The results show that both the net revenue and net cash from operating activities are significant at the 0.05 level, indicating they both have a statistically significant influence on Plug Power’s stock price. However, the operating loss does not have a statistically significant effect on the stock price, as evidenced by the much higher p-value.

**FIGURE 2
PLUG POWER INC.**



The multiple linear regression of the stock price and actual stock price follow the same general downward trend, indicating an adequate level of accuracy between the financial statement data and its effect on the resulting stock price.

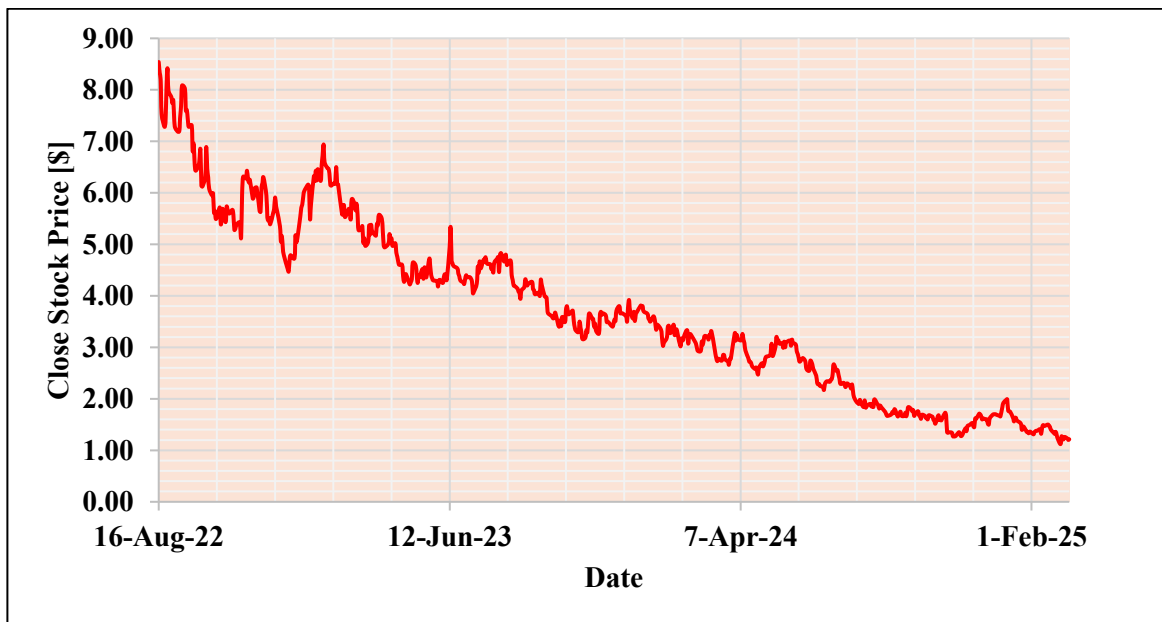
The regression analysis suggests that Plug Power’s net revenue and net cash from operating activities have a significant influence on the company’s stock price during the monitoring period of this study, which primarily covers the company's history after the IRA was enacted. Both the net revenue and net cash from operating activities exhibit a positive correlation with the stock price, indicating that higher revenue leads to higher stock prices, and simultaneously, cash-generating activities tend to inspire investor confidence in the company. Overall, the moderately high R and R^2 values seem to suggest that the financial statements effectively describe a majority of the stock price variations observed during the monitoring period, particularly since the implementation of the IRA.

Bloom Energy

Founded in 2001 and headquartered in San Jose, California, Bloom Energy Corp. is a leading developer of solid oxide fuel cell (SOFC) technology, which enables high-efficiency conversion of natural gas, biogas, or hydrogen into electricity through an electrochemical process rather than combustion (San Francisco Chronicle, 2018). Unlike Plug Power, which focuses on green hydrogen and distribution infrastructure,

Bloom Energy emphasizes stationary on-site power solutions for commercial and industrial customers, with recent efforts to expand into hydrogen-based systems (Bloom Energy, n.d.). Following the passage of the Inflation Reduction Act (IRA) in August 2022, which introduced the Section 45V Clean Hydrogen Production Tax Credit and expanded the Investment Tax Credit (ITC), Bloom stands to benefit from increased federal support for clean electricity and hydrogen technologies (U.S. Department of the Treasury, 2023). This section evaluates Bloom Energy’s financial and market performance in the wake of these policy changes, applying regression analysis to assess the correlation between the firm’s financial statements and stock price trends.

FIGURE 3
BLOOM ENERGY



Close price of Bloom Energy from August 16th, 2022, the day the IRA was enacted, until March 12th, 2025. Share price dropped 86% from a high of \$8.54 on August 16th, 2022.

Based on the quarterly and annual filings from the company (Bloom Energy, n.d.), Bloom Energy has consistently referenced the Inflation Reduction Act as a catalyst for its business model, particularly highlighting the transferability of tax credits and the extension of the Investment Tax Credit (ITC) for clean energy technologies. The company emphasized the importance of the IRA across multiple 10-Q and 10-K filings, citing its provisions as key to enabling growth in Bloom’s core business segments, namely fuel cells and electrolyzers. Financially, Bloom Energy’s balance sheet from the beginning of 2022 to the end of 2024 shows a significant increase in total assets, rising from approximately \$1.9 billion to over \$2.6 billion, driven in part by a significant increase in accounts receivables, a nearly doubling increase in inventories, and a nearly tripling increase in contract assets. Cash and cash equivalents, which stood at \$348.5 million by the end of 2022, increased to \$664.6 million by the end of 2023, and further increased to \$802.9 million by the end of 2024. Property, plant, and equipment remained relatively stable, ranging from \$400 to \$600 million, from 2022 to 2024. However, liabilities increased sharply from \$1.5 billion at the end of 2022 to more than \$2 billion by the end of 2024, indicating that the company may be leveraging debt to scale in anticipation of IRA-fueled demand. Meanwhile, stockholder’s equity increased from \$378.8 million in 2022 to \$585.2 million by the end of 2024, providing funding for potential business expansion in light of the IRA.

As shown in **Figure 3**, the closing price of Bloom Energy (Bloom Energy Corporation, 2025) decreased significantly from the day the IRA was enacted until the end of the study's monitoring period on March 12, 2025. The total price drop equated to a dollar amount of \$7.33 per share, or in terms of percentages, a 86% drop from the closing high price of \$8.54 on August 16th, 2022 to a low of \$1.22 on March 12th, 2025. This drop in price is despite the fact that net revenue increased each year from 1.2 billion in 2022 to \$1.5 billion in 2024. Moreover, the company showed a positive net cash flow of \$484.2 million in Q4 of 2024, reversing the negative net cash flow from previous quarters stretching back to Q1 of 2022. It is possible that the increase in liabilities of more than \$500 million resulted in downward pressure on the stock price, as investors may have shown concern about the company's increasing debt burden.

TABLE 2

Quarter_End	Net Revenue	Operating Loss	Net Cash From Operating Activities	Average Quarterly Close
1/1/2022	\$ 201,039	\$ (65,659)	\$ (92,443)	\$ 10.65
4/1/2022	\$ 243,236	\$ (102,173)	\$ (6,071)	\$ 8.00
7/1/2022	\$ 292,274	\$ (52,592)	\$ (69,939)	\$ 7.48
10/1/2022	\$ 462,576	\$ (40,568)	\$ (23,270)	\$ 5.68
1/1/2023	\$ 275,191	\$ (63,681)	\$ (314,710)	\$ 5.77
4/1/2023	\$ 301,095	\$ (54,456)	\$ (46,485)	\$ 4.56
7/1/2023	\$ 400,268	\$ (103,708)	\$ (133,169)	\$ 4.29
10/1/2023	\$ 356,916	\$ 12,938	\$ 121,833	\$ 3.56
1/1/2024	\$ 235,298	\$ (49,017)	\$ (147,266)	\$ 3.15
4/1/2024	\$ 335,767	\$ (23,128)	\$ (175,495)	\$ 2.84
7/1/2024	\$ 330,398	\$ (9,652)	\$ (69,469)	\$ 2.00
10/1/2024	\$ 572,393	\$ 104,706	\$ 484,228	\$ 1.56

The financial statement and stock pricing data given on a quarterly basis for Bloom Energy. It is notable that net revenue, operating loss, and net cash from operating activities jumped significantly in Q4 of 2024.

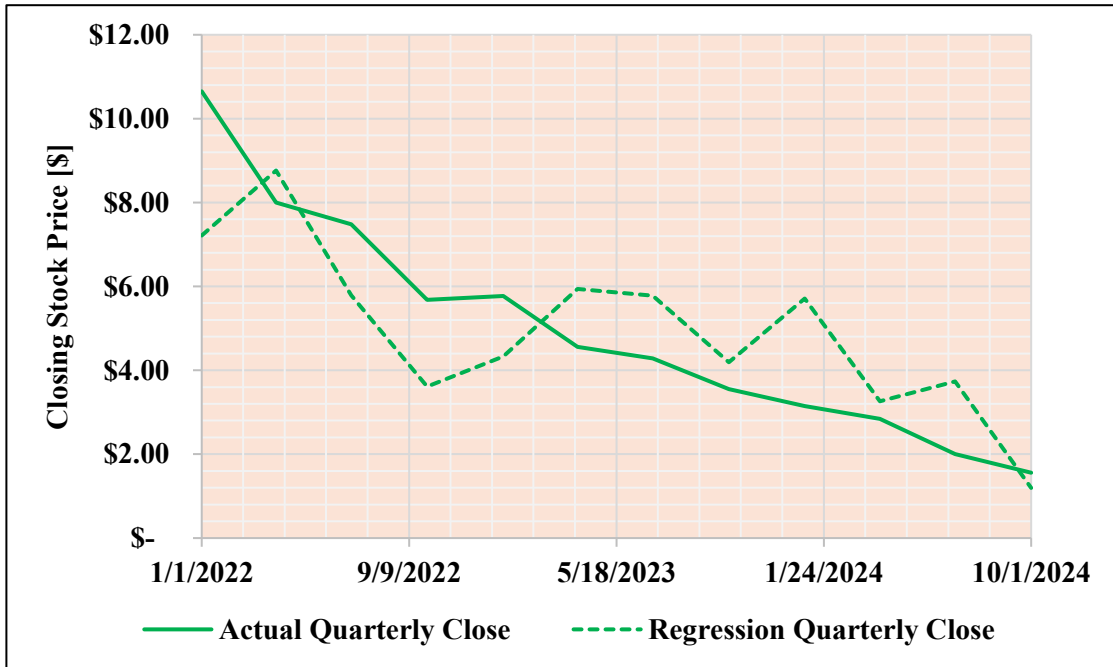
By applying this regression model from Equation (1) from **Table 2**, the following relationship between the financial statements and stock price for Bloom Energy can be found:

$$P_s = 8.0985 - (1.25 \cdot 10^{-5})P_r - (3.68 \cdot 10^{-5})P_l + (8.47 \cdot 10^{-5})P_c \quad (5)$$

where the coefficient of determination $R^2 = 0.694$, indicating that 54.9% of the variance in the stock price is explained by the model. As shown in **Figure 4**, this regression model follows the general trend of the actual stock price data during the monitoring period, with nearly the correlation coefficient $R = 0.741$, providing confidence in the results of the model.

The associated F-statistic, as described by Equation (3), is 3.242, with a corresponding p-value of 0.081, meaning the overall model is marginally significant at the 0.10 level, similar to the Plug Power regression model. On a coefficient-basis to assess the significance of the individual components of the model, the t-statistic can be calculated using Equation (4) for each coefficient. For the independent variables, the net revenue coefficient δ_1 has a corresponding p-value of 0.20, the operating loss coefficient δ_2 has a p-value of 0.09, and the net cash from operating activities δ_3 has a p-value of 0.17. The results show that both the net revenue and net cash from operating activities are insignificant at the 0.05 level, indicating they do not have a statistically significant influence on Plug Power's stock price. However, the operating loss does have a marginally statistically significant effect on the stock price at the 0.10 level, as evidenced by the much higher p-value.

**FIGURE 4
BLOOM ENERGY**



Similar to plug power, the multiple linear regression of the stock price and actual stock price follow the same general downward trend, indicating an adequate level of accuracy between the financial statement data and its effect on the resulting stock price.

The regression analysis suggests that Bloom Energy’s stock price is influenced by financial fundamentals, but not all key metrics have statistically significant effects. Unlike Plug Power, where net revenue and cash flows played dominant roles, Bloom Energy’s model showed that operating losses had a marginally significant impact on stock price ($p = 0.09$), while net revenue and net cash from operating activities were not significant predictors. This result suggests that investors may be more concerned with Bloom Energy’s path to profitability than with its revenue growth or operational cash flow improvements alone. While the company has actively positioned itself to leverage Inflation Reduction Act (IRA) incentives, particularly through Investment Tax Credits (ITC) and Section 45V hydrogen production credits, stock price performance has not reflected sustained investor confidence. From August 2022 to March 2025, Bloom Energy’s share price fell 86% despite a strong policy environment. This suggests that although IRA incentives provide a tailwind for long-term growth, Bloom Energy faces near-term financial challenges, including high debt levels and inconsistent cash flow, that weigh on investor sentiment.

FuelCell Energy Inc.

**FIGURE 5
FUELCELL ENERGY INC.**



Close price of FuelCell energy from August 16th, 2022, the day the IRA was enacted, until March 12th, 2025. Share price dropped 96% from a high of \$147.60 on August 16th, 2022.

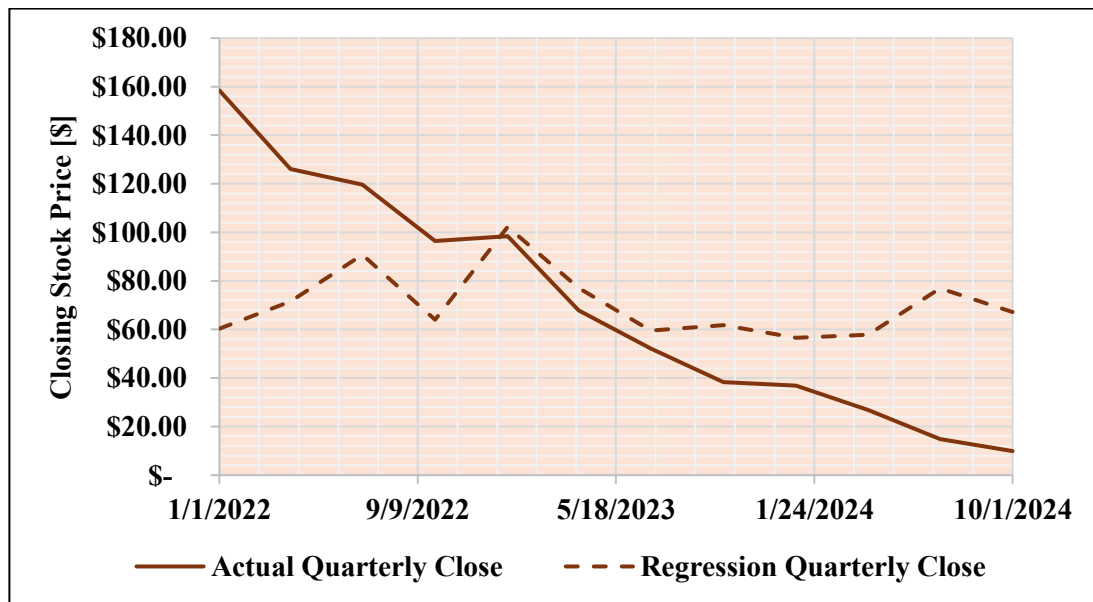
Founded in 1969 and headquartered in Danbury, Connecticut, FuelCell Energy Inc. is one of the longest-standing publicly traded companies in the hydrogen fuel cell sector. The company develops and operates carbonate fuel cell platforms that produce clean electricity and heat through the electrochemical conversion of natural gas and biogas. FuelCell Energy differentiates itself from peers like Plug Power and Bloom Energy by emphasizing carbon capture, distributed generation, and long-duration energy storage solutions aimed at utility and industrial-scale markets. Its mission focuses on decarbonizing power and producing hydrogen while enhancing energy resiliency and sustainability (FuelCell Energy, n.d.). Following the passage of the Inflation Reduction Act (IRA) in August 2022, FuelCell Energy became eligible for Section 45V Clean Hydrogen Production Tax Credits and expanded Investment Tax Credits (ITC), both of which are intended to catalyze growth in the clean energy space (U.S. Department of the Treasury, 2023). This section evaluates FuelCell Energy's financial and stock market performance in light of the IRA, using regression analysis to assess whether these federal incentives have translated into improved investor confidence and fiscal outcomes.

TABLE 3

Quarter_End	Net Revenue	Operating Loss	Net Cash From Operating Activities	Average Quarterly Close
1/1/2022	\$ 31,795	\$ (44,844)	\$ (47,754)	\$ 158.45
4/1/2022	\$ 16,384	\$ (28,217)	\$ (16,953)	\$ 126.09
7/1/2022	\$ 43,104	\$ (27,997)	\$ (23,381)	\$ 119.69
10/1/2022	\$ 39,201	\$ (42,666)	\$ (24,079)	\$ 96.42
1/1/2023	\$ 37,073	\$ (22,455)	\$ (53,377)	\$ 98.40
4/1/2023	\$ 38,349	\$ (35,858)	\$ (35,293)	\$ 67.89
7/1/2023	\$ 25,510	\$ (41,395)	\$ (35,752)	\$ 52.18
10/1/2023	\$ 22,462	\$ (36,376)	\$ (15,828)	\$ 38.27
1/1/2024	\$ 16,691	\$ (42,478)	\$ (58,267)	\$ 36.89
4/1/2024	\$ 22,420	\$ (41,361)	\$ (37,123)	\$ 26.80
7/1/2024	\$ 23,695	\$ (33,617)	\$ (63,361)	\$ 14.80
10/1/2024	\$ 49,326	\$ (41,032)	\$ 5,845	\$ 9.91

The financial statement and stock pricing data given on a quarterly basis for FuelCell energy. It is notable that net revenue increased significantly in Q4 of 2024 associated with a net positive cash flow from operating activities.

**FIGURE 6
FUELCELL ENERGY**



The multiple linear regression of the stock price and actual stock price show little correlation with one another.

FuelCell Energy’s financial statements from fiscal years 2022 to 2024 (FuelCell Energy, n.d.) show that the company continues to face significant challenges in reaching profitability, despite legislative tailwinds from the IRA. Annual revenue declined over the period, from \$130.5 million in 2022 to \$112.1 million in 2024, indicating limited top-line growth despite the availability of clean energy tax credits. More concerning is the trend in net losses, which widened by over 6% from \$147.2 million in 2022 to \$156.8 million in 2024. This erosion in profitability is further underscored by a shrinking cash reserve, which declined from \$458.0 million in 2022 to \$148.1 million in 2024, suggesting increasing cash burn and operational strain. Total assets increased marginally from \$939.7 million in 2022 to \$944.1 million in 2024, while liabilities ballooned from \$185.3 million to \$216.7 million over the same period. These figures

suggest that FuelCell Energy has yet to convert IRA-related opportunities into sustainable financial gains, and its growing losses may dampen investor confidence despite macroeconomic support for the hydrogen sector.

As shown in **Figure 5**, the closing price of FuelCell Energy (FuelCell Energy, Inc., 2025) decreased significantly from the day the IRA was enacted until the end of the monitoring period of this study on March 12th, 2025. The total price drop equated to a dollar amount of \$141.06 per share, or in terms of percentages, a 96% drop from the closing high price of \$147.60 on August 16th, 2022 to a low of \$6.54 on March 12th, 2025. This drop in price corresponds to the year-over-year decrease in revenue from 2022 to 2024, but Q4 of 2024 did see a sharp increase in revenue and a net positive cash flow. The continuing operating loss, quarter after quarter, as well as the increase in liabilities, may have reduced investor confidence. Despite this, the property, plant, and equipment rose from \$58.1 million in 2022 to \$130.7 million in 2024, indicating that the firm may be making investments to take advantage of the IRA tax credits.

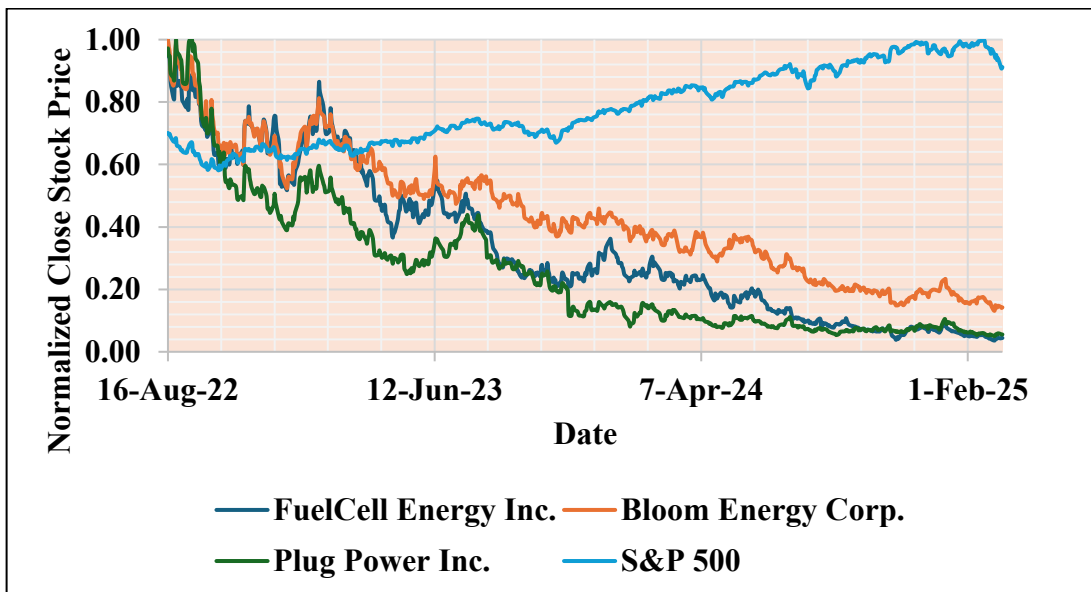
By applying this regression model from Equation (1) from **Table 3**, the following relationship between the financial statements and stock price for FuelCell Energy can be found:

$$P_s = 104.3264 + (6.56 \cdot 10^{-4})P_r + (1.66 \cdot 10^{-3})P_l - (2.06 \cdot 10^{-4})P_c \quad (6)$$

where the coefficient of determination $R^2 = 0.086$, indicating that only 8.6% of the variance in the stock price is explained by the model, showing very little correlation between the two, as shown in **Figure 6**. The associated F-statistic is 0.250 with a p-value of 0.86, confirming that the regression model as a whole does not explain a significant amount of the variance in FuelCell Energy's stock price. Moreover, the t-statistic analysis for the coefficients all show p-values between 0.399 and 0.825, further illustrating the lack of statistical significance between the model and actual stock price. These results highlight a broader disconnect between FuelCell's underlying financial performance and its stock price, implying that investor sentiment may be driven more by external market forces, speculative trends, and macroeconomic factors than by the company's quarterly fundamentals.

Comparison With Market Trends

FIGURE 7



Normalized stock price of FuelCell energy, bloom energy, and plug power compared with the S&P 500 to assess macroeconomic Market effects.

To evaluate whether the Inflation Reduction Act has translated into meaningful gains for hydrogen fuel cell companies, it is important to assess how closely financial fundamentals align with investor sentiment, as reflected in stock price. As was done in the previous sections, a multiple linear regression model using net revenue, operating loss, and net cash from operating activities as predictors offers a quantifiable way to determine whether the financial impact of IRA-related incentives is captured in market valuations. These three metrics represent key indicators of operational efficiency, cost management, and liquidity, factors that should theoretically improve as companies leverage tax credits and subsidies under the IRA. If investor confidence is tied to expectations of improved profitability and cash flow due to federal support, then stock prices should be responsive to changes in these variables. Conversely, a weak or statistically insignificant relationship, such as with FuelCell Energy Inc., would suggest that investors remain skeptical of these companies' ability to convert policy benefits into long-term financial stability. This modeling approach thus provides a structured means of testing whether the IRA's economic intent, to drive clean energy innovation through financial viability, is materializing at the firm level. Nevertheless, models can only tell us so much, as the broader market may also influence stock prices.

A comparison of normalized stock prices from August 2022 to March 2025 (**Figure 7**) reveals stark differences in how investors have perceived the three fuel cell companies since the passage of the Inflation Reduction Act. FuelCell Energy's stock has shown the steepest relative decline, suggesting that market participants remain highly skeptical of the firm's financial trajectory and its ability to effectively capitalize on federal incentives. Plug Power, despite initially benefiting from post-IRA optimism and its prominent position in the hydrogen infrastructure space, has also experienced a consistent downward trend, reflecting growing investor concern over its cash burn rate, debt accumulation, and execution shortfalls. In contrast, Bloom Energy's stock has been comparatively more resilient, retaining greater normalized value over the same period. This relative outperformance may be attributed to stronger cost control, a more focused business model centered on stationary energy solutions, and better integration of IRA-related tax credits into its long-term growth strategy. Overall, the divergence in normalized stock prices underscores that while IRA provisions offer potential tailwinds, investor confidence remains tightly linked to financial discipline, operational efficiency, and a demonstrable path toward profitability.

When compared to the S&P 500 index (SPDR S&P 500 ETF Trust, 2025), which remained relatively stable and even saw modest gains from August 2022 to March 2025, the underperformance of all three hydrogen fuel cell companies becomes even more apparent. This contrast underscores the sharp declines in stock prices observed for Plug Power, FuelCell Energy, and, to a lesser extent, Bloom Energy, were not simply the result of macroeconomic headwinds or broader market volatility. Rather, these trends point to company-specific concerns, including prolonged unprofitability, persistent negative cash flows, and mounting investor skepticism over whether these firms can effectively leverage IRA incentives. The divergence from the S&P 500 suggests that while federal policy support has created long-term potential, market participants have not yet seen convincing signs of financial turnaround in the sector. In this context, the IRA may be viewed less as an immediate catalyst for investor confidence and more as a conditional opportunity, one that only translates into market gains if firms can demonstrate operational efficiency and credible paths to profitability.

CONCLUSION

The Inflation Reduction Act was designed to serve as a transformative policy for clean energy industries, with particular emphasis on hydrogen fuel cells through Section 45V and extended Investment Tax Credits. While these incentives offer substantial theoretical benefits, this study finds that their real-world impact on firm-level financial performance and investor sentiment has been mixed. Among the three companies analyzed, Bloom Energy demonstrated relatively better financial resilience and stock price stability, supported by stronger cost control and a business model more immediately aligned with IRA provisions. In contrast, Plug Power and FuelCell Energy experienced deteriorating financials, marked by persistent operating losses and declining cash reserves, despite making large-scale investments that could potentially leverage policy support. Multiple linear regression models, while useful for quantifying these

relationships, revealed limited statistical significance, especially in the case of FuelCell Energy, where investor sentiment appeared largely decoupled from financial fundamentals.

The broader market comparison against the S&P 500 further underscores this divergence. All three hydrogen fuel cell companies significantly underperformed the broader index from August 2022 to March 2025, indicating that their struggles were not primarily driven by macroeconomic forces, but rather by company-specific financial and operational risks. This disconnect suggests that the Inflation Reduction Act, while a necessary catalyst for the clean energy transition, is insufficient on its own to secure investor confidence or guarantee financial sustainability. Ultimately, the success of hydrogen fuel cell companies will depend not only on policy alignment but also on their ability to demonstrate operational efficiency, consistent revenue growth, and prudent capital management. Firms that meet these criteria are more likely to convert policy momentum into long-term value creation, while those that do not may continue to face downward pressure, regardless of favorable legislative environments.

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