

Transferable tax credit market intelligence report

2023 end of year report

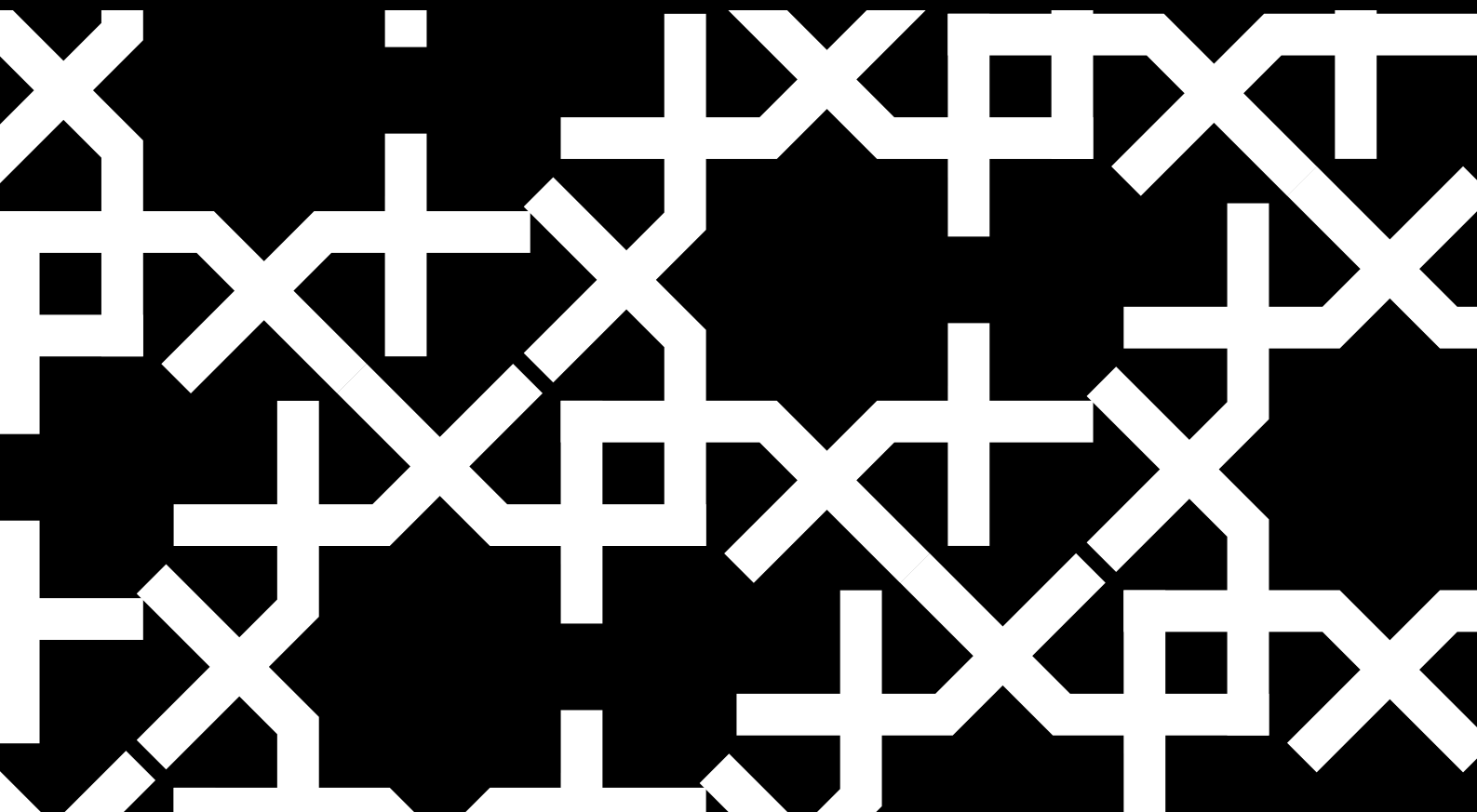


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01

Introduction



Introduction to transferability

The 2022 Inflation Reduction Act (IRA) is the world's largest ever investment in clean energy. The clean energy sector has already been growing exponentially and the IRA is expected to catalyze \$3 trillion of investment in the US over the next 10 years, according to Goldman Sachs.

The IRA makes principal use of tax credits, which are more generous to developers and manufacturers than ever before and are extended for at least 10 years, providing stability and certainty to the industry. In addition, the IRA added eligible categories for new decarbonization technologies (such as stand-alone energy storage, hydrogen, and carbon capture) and advanced manufacturing.

These tax credits will support modern and efficient clean energy infrastructure, promising new technologies, and the reshoring of critical supply chains.

The new tax credits are the foundation that will support the next century of clean and abundant American energy. To allow the marketplace to realize the full value of the credits, the law introduces a new transferability mechanism that permits 12 federal tax credits to be sold for cash. Though a limited form of transferability exists in a number of smaller programs at the state and federal levels, even the largest transferable credit programs will be an order of magnitude smaller than the new IRA credit regime. There are also substantial differences in the structure of those markets.

True transferability has never existed at the federal level until now.

The United States has incentivized energy production through the tax code for more than one hundred years and has specifically used Investment and Production Tax Credits (ITCs and PTCs) since 1962 and 1992, respectively. These credits have been extended many times with bipartisan support. In the year since the passage of the IRA, US investment alone has reached nearly \$400 billion. Global investment, too, is surging, and expected to have hit a record \$1.7 trillion in 2023, according to statistics from the IEA. A December report by JPMorgan also noted a surge in renewable energy deployment, estimating that “global installations of solar and wind are tracking towards 517 GW in 2023, up 52% year over year.”⁽¹⁾ Against this backdrop, transferability is an

¹ 2024 Outlook: Macro and Politics Likely Drive Another Year of Volatility, published 12 December 2023 by JPMorgan North America Equity Research.

essential tool supporting efficient clean energy project finance.

Tax attributes like clean energy tax credits need to be monetized efficiently by project developers. Historically, developers have monetized tax attributes through partnership structures. This market – known as tax equity – was \$18 billion in 2022. The relatively small pool of longstanding tax equity investors cannot alone support the expected five-fold increase in the dollar value of tax attributes generated by the IRA. Many new buyers will need to participate in this larger and more fragmented market.

In 2022, US corporations paid \$334 billion in taxes and the Congressional Budget Office forecasts that number to grow to \$527 billion by 2031. For \$83 billion⁽²⁾ to be monetized to corporations, roughly 16% of all 2031 corporate tax liabilities would need to be allocated to tax credits.

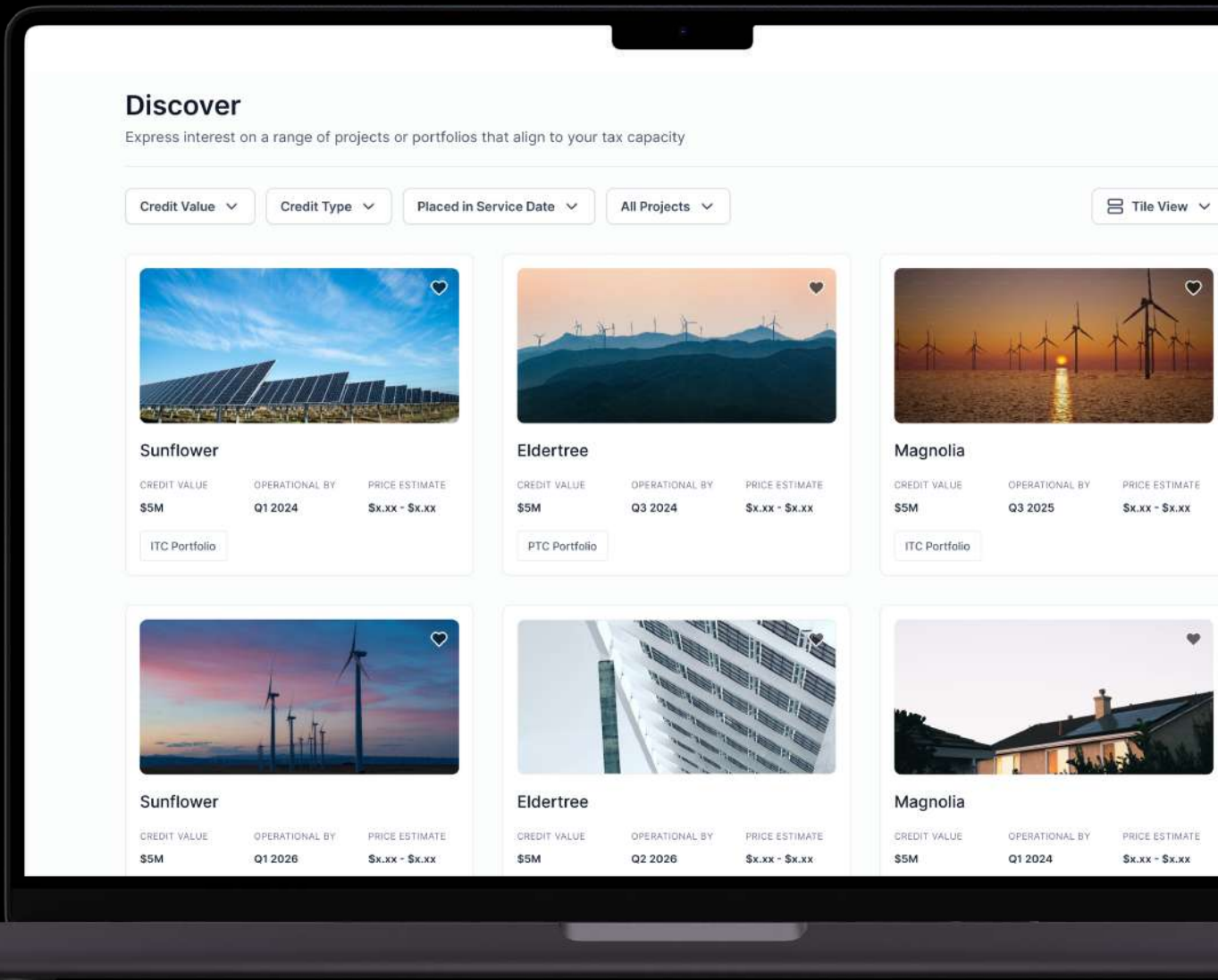
² Credit Suisse's independent estimate of the potential annual outlay of IRA credits



How is this new market taking shape?

While tax credit transferability went into effect in January 2023, very few if any transactions occurred until mid-June when Treasury published [draft guidance](#) offering clarity to prospective participants. In the second half of the year, transactions rapidly accelerated, with new tax credit buyers, sellers, and intermediaries entering the energy tax credit market for the first time. They were motivated by the opportunity to manage tax liabilities, receive essential investments, and scale syndication and advisory businesses, all while supporting sustainability goals and clean energy development.

As we work to build a more liquid and efficient market for transferable tax credits, we are often asked about market pricing, contract terms, and other features of this fast-emerging market. Transparency and standardization will be important features that support market efficiency and give buyers confidence to participate. Pricing in particular is a critical input to the financial planning and viability of projects to developers, and is already being used as an input to the underwriting and pricing of debt and equity investments in projects.



What is Crux?

Crux is the ecosystem for developers, tax credit buyers, and intermediaries (including banks, syndicators, tax advisors, and more) to transact and manage transferable tax credits. The Crux platform helps all parties streamline the transaction process, access a large and liquid market, and manage risk – offering market transparency and facilitating more transactions that achieve financial goals and accelerate the energy transition.

Survey demographics & report methodology

We conducted a detailed market survey from November 14th to December 10th. The survey was distributed to an audience of over 2,000 prospective market participants through email, social media ads, and personal outreach. All survey respondents were asked questions about their firm's current and planned activities in the market for transferable tax credits, their motivations and challenges, and expectations for 2024.

150 Total survey responses from tax credit buyers, sellers, and intermediary partners

The largest proportion of responses (43.4 %) came from intermediary businesses (Figure I-1). The “intermediary” category consists of representatives from brokers, syndicators, insurers, law firms, tax advisories, banks, and other financial institutions. These entities frequently represent buyers in the tax credit market, and their perspectives are indicative of current dynamics. Sellers of tax credits (chiefly clean energy project developers or sponsors) accounted for 39.8% of all responses. Buyer firms (all corporate taxpayers) represented 16.9% of responses.

Buyers and intermediaries represented a diverse array of firms with reported annual tax liability ranging from under \$1 million to over \$2 billion (Figure I-2).

Figure I-1. Survey submissions by market persona

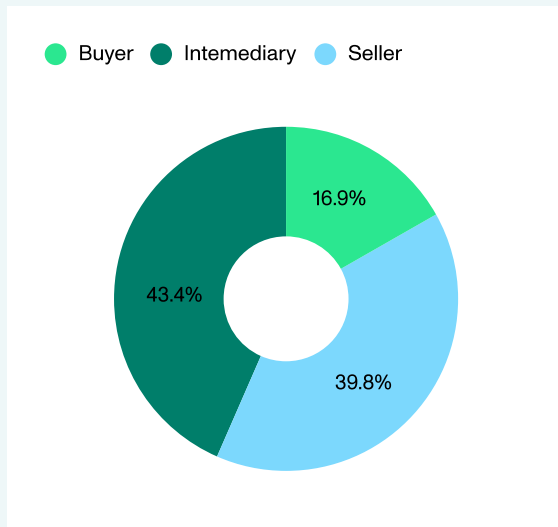
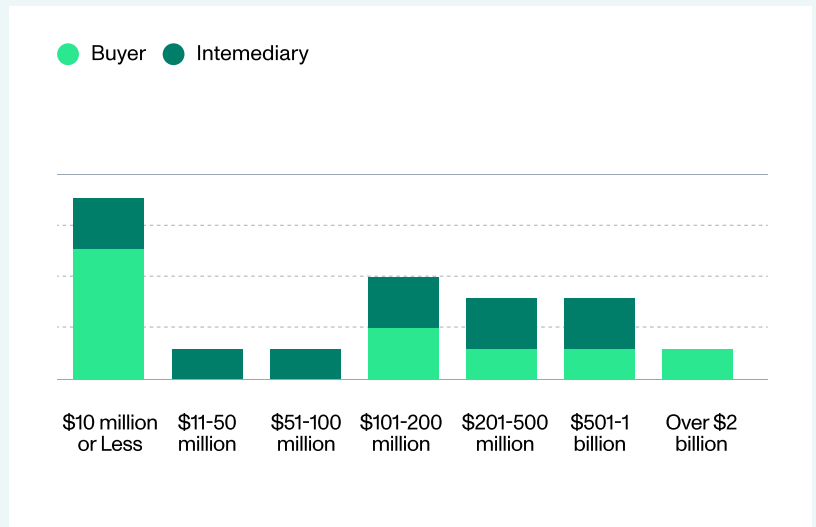
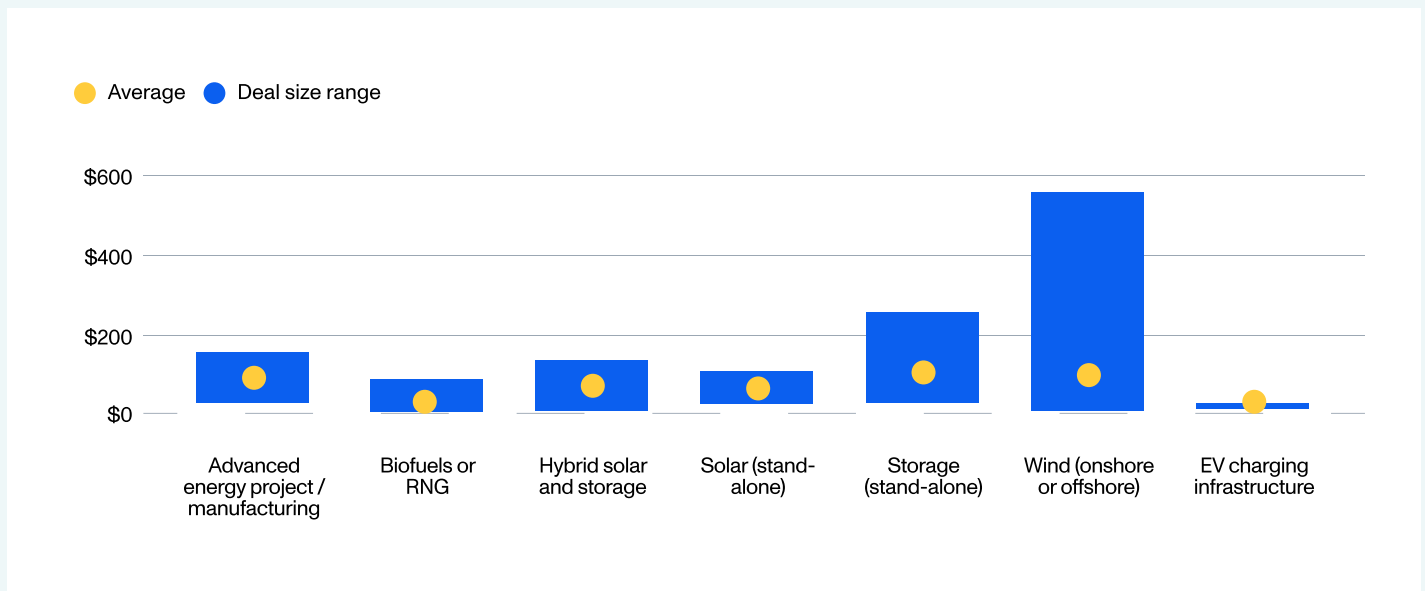


Figure I-2. Buyer & intermediary respondents by aggregate potential capacity



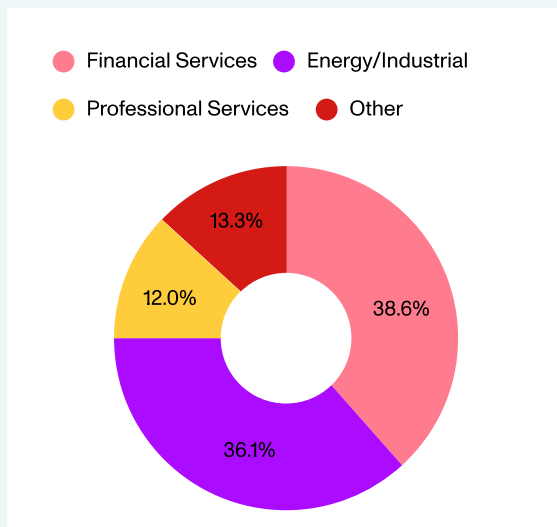
Sellers of tax credits reported transactions ranging in value from under \$1 million to several hundreds of millions across seven technology categories: advanced energy manufacturing, biofuels, stand alone solar, stand alone energy storage, hybrid energy storage and solar, wind energy, and EV charging (Figure I-3).

Figure I-3. Deal size by technology type



While survey participants represented 15 diverse market sectors, nearly 75% of responses were provided by representatives from companies in the energy or financial services industries (Figure I-4). This concentration is not surprising given the historic significance of the financial services sector as the tax credit “buyer” in tax equity transactions. The energy and industrials sector is most often responsible for developing projects which are eligible to generate tax credits, and likely will continue to dominate the seller side of the market.

Figure I-4. Respondents by market sector



In the market pricing analysis section of the report, survey data is augmented with data from the Crux platform, where hundreds of users — including many of the world’s largest clean energy developers, corporations, and financial institutions — posted, bid on, and managed more than a billion dollars of clean energy tax credits in 2023.

To ensure diverse perspectives were represented in the report, we included qualitative insights from conversations with hundreds of buyers, sellers, lawyers, tax advisors, syndicators, policymakers, and academics over the past year and referenced data from Credit Suisse, Goldman Sachs, Greenberg Traurig, JP Morgan, Foss & Company, Treasury, IRS, The White House, American Clean Power, Novogradac, and more.

In total, this report reflects information collected from \$3.5 billion in 2023 transferable tax credit transactions. We estimate that this information represents between one third and one half of the market for transferable credits in 2023 on the basis that total deal value will likely reach \$7-\$9 billion.⁽³⁾

Given the breadth of responses and dollar value represented, the report endeavors to provide a comprehensive picture of the 2023 market. It is important to note that the survey and platform data are observed data at one point in time. We expect intra-year variability on pricing and macroeconomic factors to affect long term average pricing. As the market develops, we plan to expand on this data to make it even deeper, richer, and as comprehensive as possible.

³ Market participants can continue to complete transactions in 2023 tax credits into 2024. We anticipate that a number of deals will be completed between January 1 and April 15, and it is not possible to predict how much market activity will occur in the future.



02

Executive summary

Executive summary

The market for transferable tax credits evolved and matured rapidly in the second half of 2023, outpacing our expectations in overall size, technology diversity, and price consolidation.

Based on our survey data, Crux's active and completed deals, and publicly available information, we anticipate that transaction volume in 2023 tax credits will reach between \$7-9 billion. This is an enormous feat for a market that has been transactable for fewer than six months.

This isn't just good news for project developers trying to sell their credits, or corporate taxpayers who want to manage their tax liabilities. An efficient tax credit marketplace is a critical tool for driving new investment in the US economy.

Investment in clean energy tax credits (and other project tax attributes) could reach \$83 billion by 2031, according to Credit Suisse (figure ES-1). Our estimates suggest that, in 2023, \$7 billion in investments in transferable credits helped lift total investment in clean energy tax attributes to \$30 billion, on top of an estimated \$23 billion in tax equity.⁽⁴⁾

⁴ Estimated, derived from multiple sources, including JPMorgan, NRF, and others

Figure ES-1. Market potential for tax attribute investment, through 2031 (\$ billion)



Transferable credits are likely to be the main driver of tax attribute investment, as JPMorgan writes in their 2024 Outlook⁽⁵⁾: “Traditional tax equity partnership structures will only grow in the single digits over [the next several years], with the remaining demand met by credit transfer markets... This preliminary forecast implies the tax equity market could be in the \$60-90bn range in 2025, with the majority of supply from transferability markets.”

Investment in transferable credits represents domestic jobs, reshoring of clean energy supply chains, and the buildout of an entirely new manufacturing economy. Efficient financial tools like transferable credits, supported by purpose-built technology like Crux, can help these investments go further, faster.

⁵ 2024 Outlook: Macro and Politics Likely Drive Another Year of Volatility, published 12 December 2023 by JPMorgan North America Equity Research.

The transferable tax credit market is still taking shape. In this report, we share the results of our market research, our team's experience, and our quantitative analysis of transaction data:

- 1. First, we found that buyers and sellers of tax credits in 2023 approached the market from two different perspectives.** Buyers were (and are), above all, focused on risk. They're more likely than either sellers or intermediaries to describe themselves as still "learning about the market," and all of those who said they're not planning a transaction indicated that a clearer understanding of risk would help change that. Sellers don't need much convincing — 93% indicated they're planning to pursue a tax credit deal, or have already. For them, market transparency is the biggest obstacle: how can a credit seller know they're getting the best price for their credits? In 2023, the market took steps towards efficiency, but isn't there yet.
- 2. Next, our report unpacks trends and themes from \$3.5 billion of tax credit transactions, representing an estimated 30%-50% of the market.** We found significant appetite for diverse tax credits in 2023; tax credits from advanced manufacturing facilities and bioenergy projects were almost as popular as tax credits from solar projects. There were a large number of small deals (sub \$50 million) last year. The average ITC deal in our dataset was \$20 million and priced at 92 cents on the dollar, while the average PTC deal was \$60 million and priced at 94 cents on the dollar. Insurance was a common element in transactions, especially for ITCs. Finally, 60% of the ITC deals we tracked reported a step-up in the project's cost basis, while 40% did not (or didn't know). To date, projects with a step-up are more likely to be larger and syndicated out of tax equity partnerships.
- 3. Finally, we surveyed the market regarding expectations for transferability in 2024.** Again, the market appeared divided among buyers and sellers, with buyers three times more likely to say they expected credit prices to decline in 2024. The majority of all respondents (67%) told us they expect deal sizes in 2024 to rise. A key driver in the market for tax credits today is the divergence of pricing by credit type and technology — conventional solar and wind tax credits tend to price above comparably sized ITCs and PTCs for newer technologies.

Some of that difference could be due to uncertainty resulting from still-to-be-finalized guidance for calculating tax credits in these newly eligible applications. So, price convergence could boost average credit pricing for newer credit types, and solar and wind credit pricing could decline a bit, especially in the early part of the year. 2024 will likely feature some of the first project financing deals designed with transferability in mind, as well, and we look forward to seeing how those new structures help shape the market's evolution.

A common theme emerged throughout the research, and it bears repeating: **over and over again we observed the importance of intermediaries (banks, brokers, tax advisors, technology platforms, and others) to build trust and transparency in this new market.**

They are critical to closing the gaps between buyers' and sellers' market expectations. They meet buyers where they are to ensure that risks are adequately mitigated. They facilitate a competitive environment that helps sellers get the best value — in fact, our data shows that **sellers got a higher price on credits sold through Crux or intermediated transactions 45% more often than through a bilateral deal.** This market depends on the support of advisors and technology to grow. Their importance cannot be overstated.



03

The 2023 market

The 2023 market

Divergent perspectives

Buyers and sellers were in different places when it comes to their attitudes and expectations for the tax credit market, their level of preparedness, and their perception of obstacles. In many ways, they're in opposite positions — about 93% of sellers in our survey plan to take part in a tax credit transaction. Meanwhile, buyers were most likely to report that they're still learning about the market with no plans to get involved. That can change fast — just as it did in June when the first tranche of “early adopter” buyers entered the tax credit market. One key takeaway: centralizing technology and dealmakers, like tax advisors, brokers, and other intermediaries, are critical for managing expectations on both sides of a transaction and helping their clients up the learning curve.

Risk management

Buyers in the market for transferable tax credits are attuned to transaction risks. A number of standard practices help to lower the barrier to entry for buyers and improve the attractiveness of credit deals. For instance, deals are almost always backed by insurance (or by a project sponsor guarantee) and the credit seller typically foots the bill for insurance and legal fees associated with due diligence. Even so, our data indicated that buyers were most likely to report they were “learning about the market” but not planning to transact. All such buyers went on to say that a “clear understanding of risks and how to mitigate them” would be most impactful on their decision to purchase tax credits.

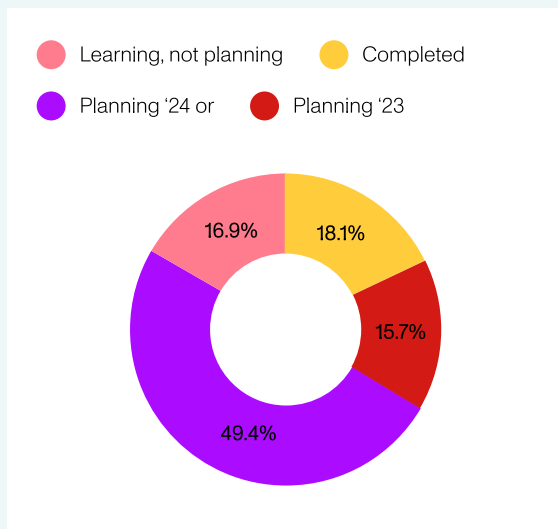
Price transparency

Price transparency is the most common area of concern for credit sellers (a group that includes project developers, sponsors, and manufacturers), and for good reason. Without transparency into pricing for similar credits, credit sellers do not necessarily know whether they're getting a good deal. We designed Crux to help facilitate transactions through all stages, including accelerating a seller's price discovery process. As pricing for credits converges through the coming years, better market data will be a critical component to building a liquid and efficient market for transferable tax credits.

Market participation

Approximately one third of the market survey respondents (34%) either completed a transaction or planned to complete a transaction in 2023 (Figure 1). The majority, 53%, indicated that they are planning to complete a tax credit transaction in 2024. Approximately 13% of respondents indicated that they are learning about the market but not planning a transaction at this time.

Figure 1. Market participation status

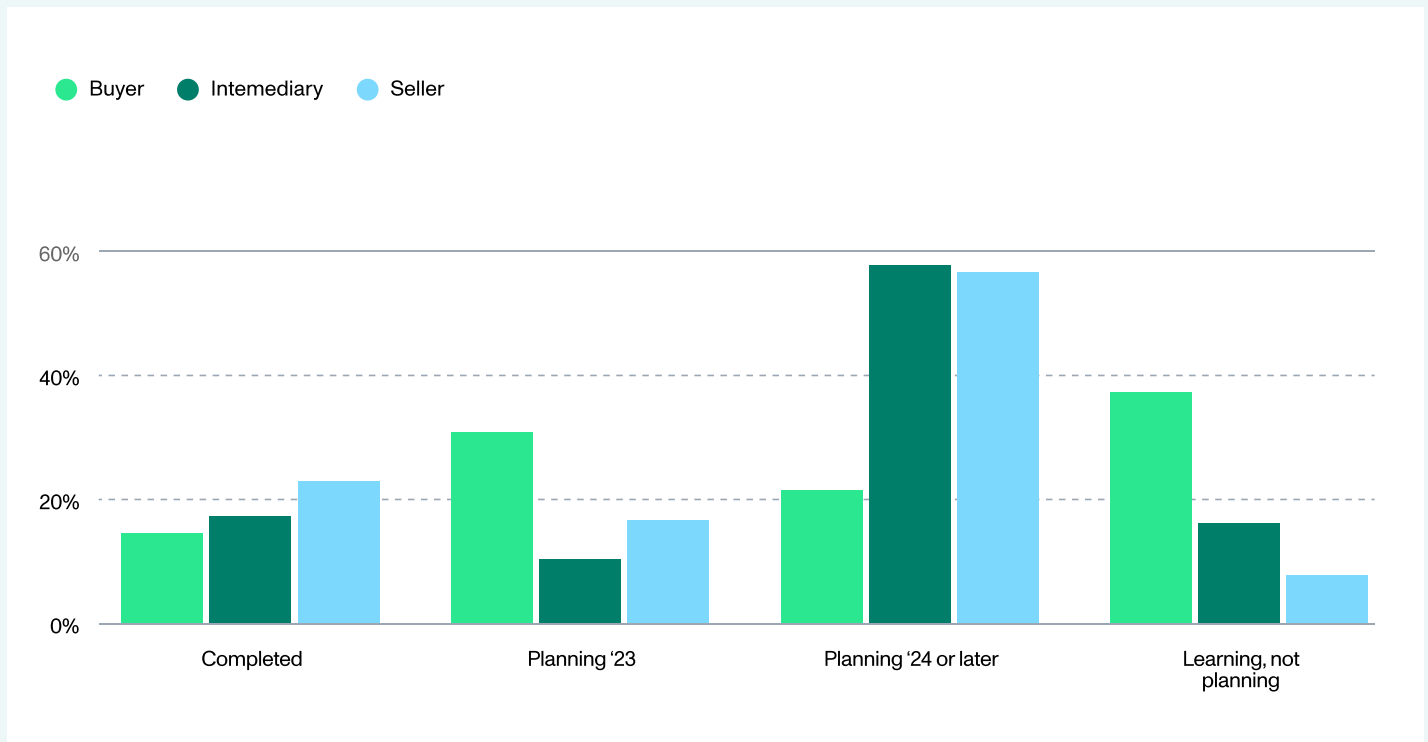


The majority of **sellers** (55%) indicated that they are planning to begin monetizing transferable tax credits in 2024. 36% of them were expecting to transact in 2023 or had already done so. Only 9% of them stated they had no plans to participate in the market yet and were still learning more (Figure 2).

Buyers were less likely to report active participation at this time. They were most likely (36%) to report that they were still learning about the market, with no solid plans to participate yet. 43% had transacted (or were expecting to) in 2023, and 21% plan to do so in 2024.

Similar to sellers, the majority of **intermediaries** (56%) indicated that they plan to transact in 2024 while 28% of them had transacted in 2023, or expect to close a 2023 transaction⁽⁶⁾. 17% said they had no plans to participate just yet, and wanted to learn more.

Figure 2. Market activity status by persona



⁶ Transactions in a given year tax credits need to be completed by the tax filing deadline for that year, typically April 15 of the next calendar year, unless extended.

Motivations

Most commonly, buyers appear drawn to the market for obvious reasons — saving money on taxes or supporting clean energy. Our survey data skews towards buyers who are either active in the market or have interest in it, slightly overrepresenting the small portion of eligible buyers who actually participated in 2023. Market data suggests that a large portion of prospective participants who stayed out of the market may enter it in 2024.

During a webinar event hosted by the law firm Greenberg Traurig's (GT)⁽⁷⁾ on December 12, 2023, GT polled over 570 attendees to gauge market participation. 76% reported not completing any stand-alone transfer deals in 2023. However, when asked whether they planned to participate in the transferability market in 2024, 78% of attendees anticipated that some portion of their projects would involve transferability — a huge shift in participation.

Our analysis aims to understand what is holding buyers back. All surveyed buyers who said they were not active in the market for tax credits indicated that they would be more motivated to participate if they clearly understood the risks of a tax credit transaction and how to mitigate them.

No surprise then, in this nascent market, that prospective tax credit buyers are ultra-focused on potential risks. Those who participated, or plan to next year, feel their understanding of these risks and mitigation strategies enable them to pursue the primary benefits of transferability: tax savings and support of clean energy development.

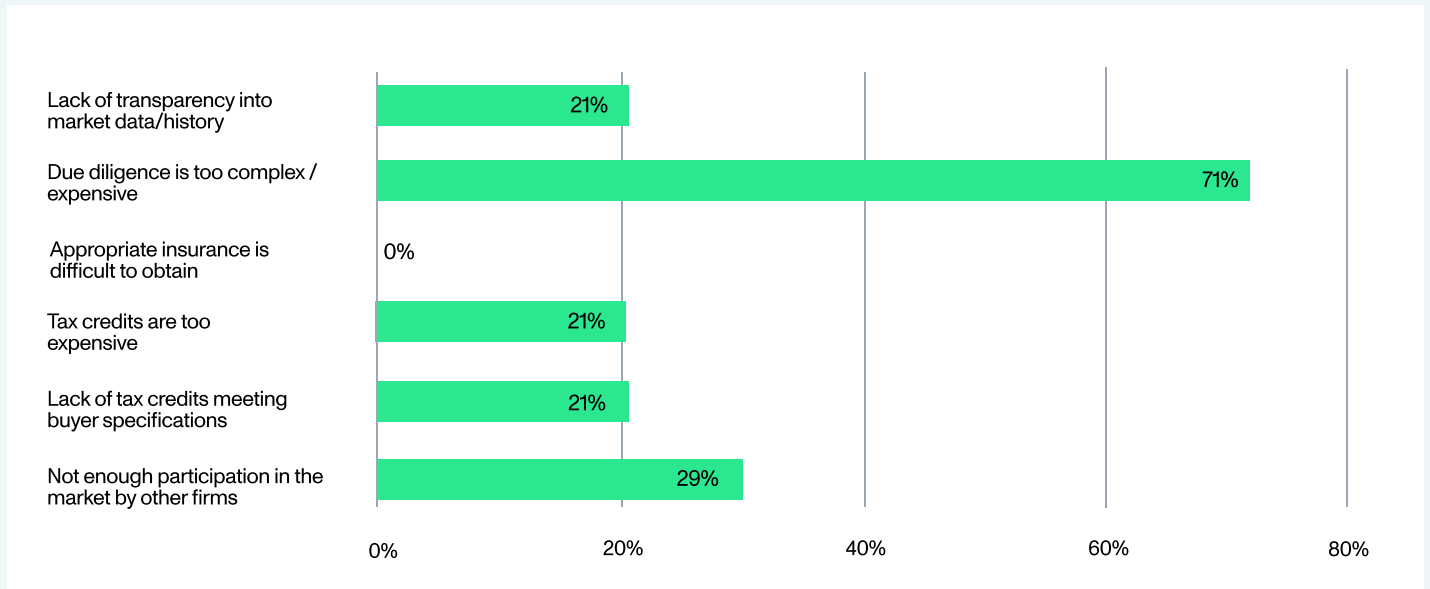
Risk mitigation is the primary condition that needs to be met in order for buyers to pursue a transaction.

⁷ *"Renewables year-end market update — tax equity, M&A, and finance markets"*

Obstacles

Looking deeper into the risks and obstacles **buyers** perceive, 71% of buyers in our market survey identified the price and complexity of due diligence as the biggest obstacle to scaling their market participation (Figure 3). They also noted the lack of transparency into market data and history, high cost of credits, lack of credits meeting expectations (21% each), and insufficient participation by other firms as potential deterrents (29%).

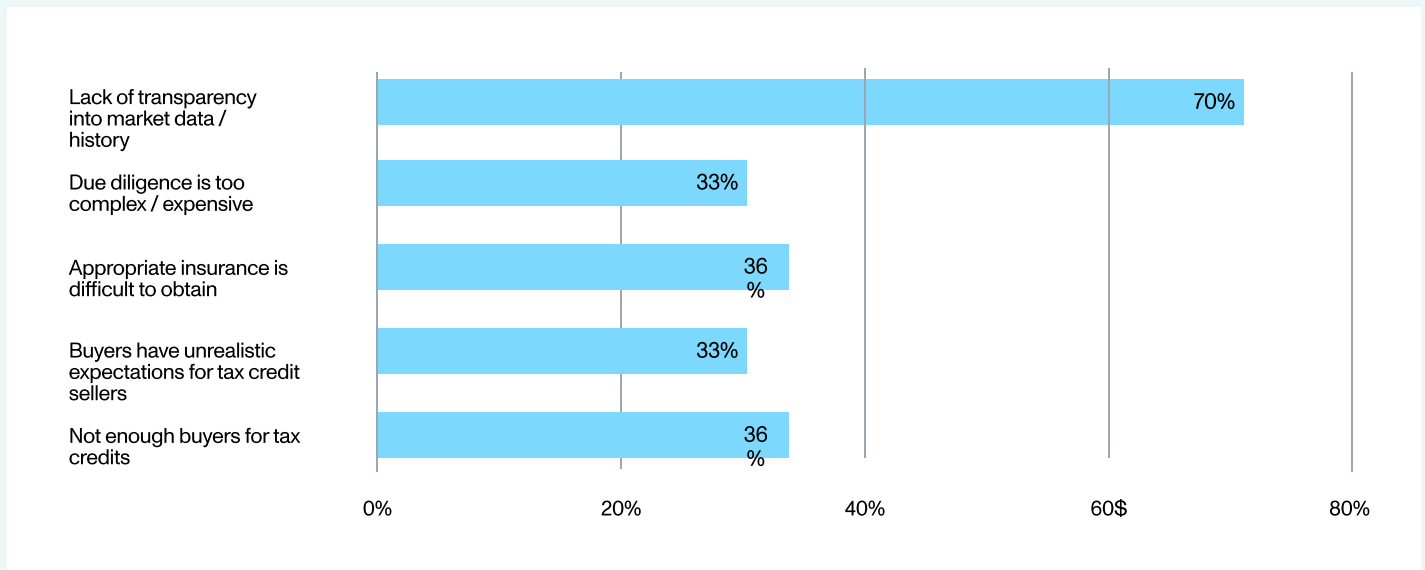
Figure 3. Buyers' primary reasons to not transact



Note: values will not sum to 100%, respondents could select more than one response.

In direct contrast, a much larger proportion of **sellers** (70%) stated that lack of transparency into market data and history was the primary obstacle to a scalable market (Figure 4). Only a third felt that due diligence was a deterrent. One third also reported that buyers have unrealistic expectations for tax credit sellers (this number is symmetrical to the third of buyers who reported that tax credits are too expensive). 36% of sellers also reported that appropriate insurance is difficult to obtain, while no buyers shared that sentiment.

Figure 4. Sellers' primary reasons to not transact

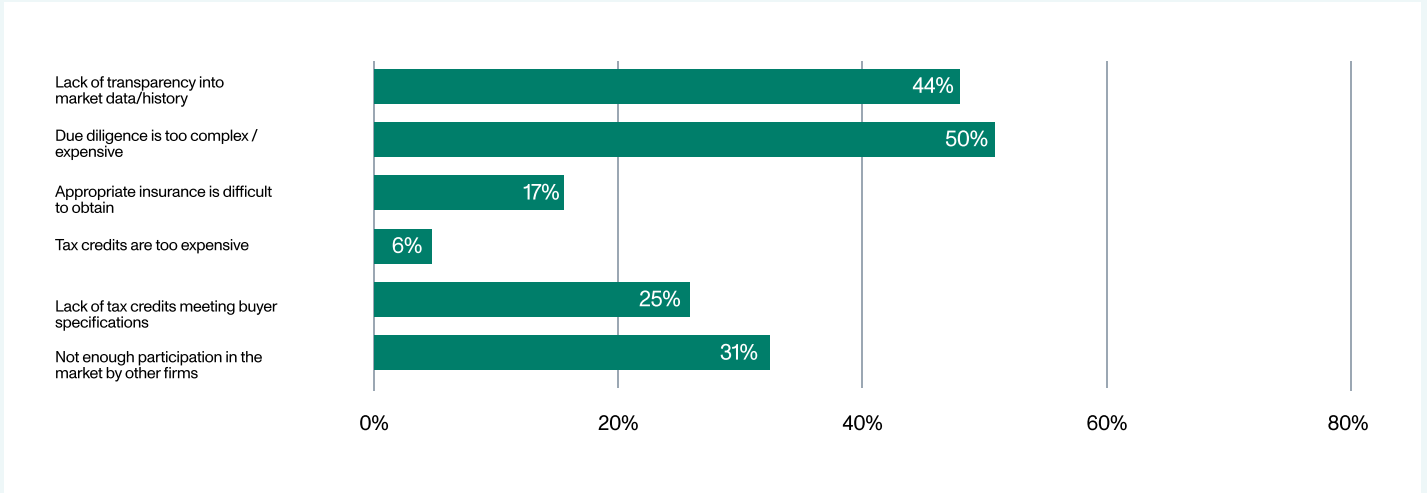


Note: values will not sum to 100%, respondents could select more than one response.

Crux's take: It's not hard to imagine why sellers are particularly attuned to market transparency. Getting the best price is often critical to sellers' financial health and ability to continue building clean energy projects. Without transparency, it's difficult to ascertain whether they're getting a good deal for their credits. Platforms like Crux are designed to accelerate the process of price discovery and help sellers ensure that they get the best price for their credits. We view the process of price discovery as a key component of a scalable tax credit market.

Intermediaries fell somewhere in the middle, with 50% identifying due diligence as the primary obstacle and 44% citing lack of market transparency (Figure 5).

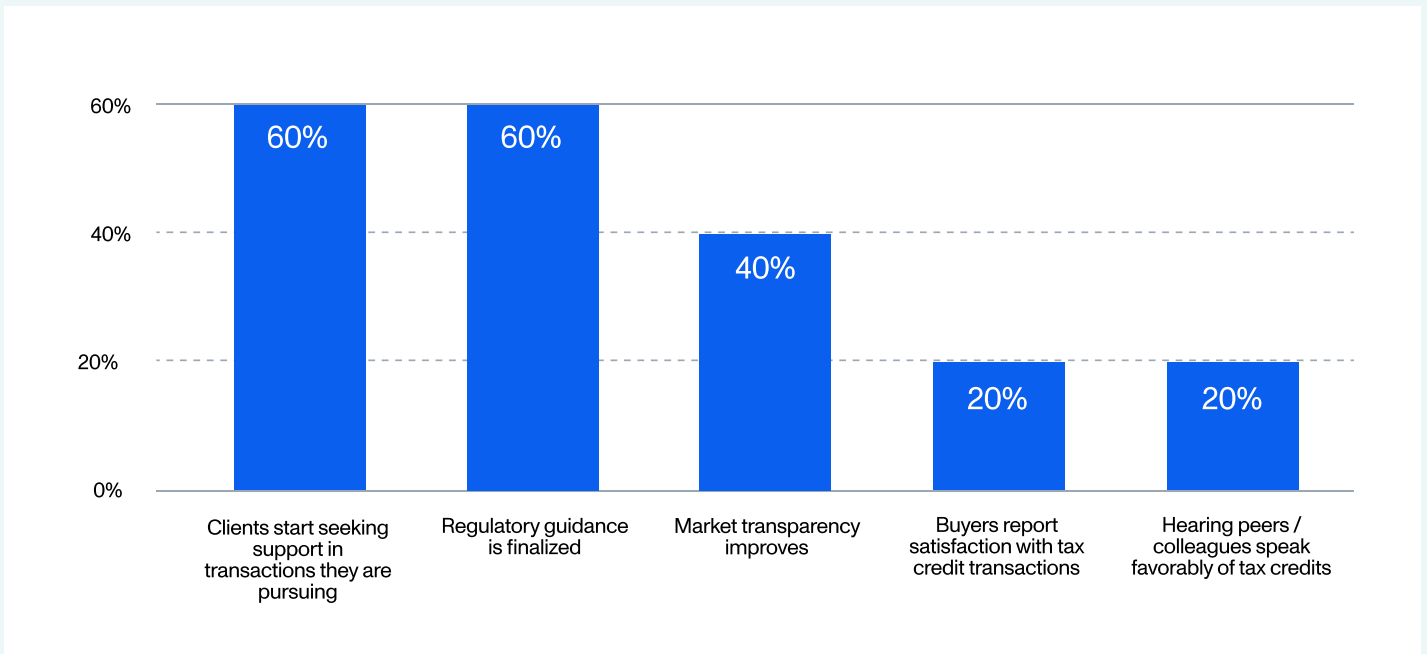
Figure 5. Intermediaries' primary reason why parties don't transact



Note: values will not sum to 100%, respondents could select more than one response.

Intermediaries were also asked about what could prompt more market participation from buyers (Figure 6). They echoed sentiments about the need for better market transparency and final regulatory guidance, which would offer another form of clarity. Some intermediaries (echoing buyers) emphasized the importance of social proof to scale buyer participation: hearing peers speak favorably of tax credits, buyers reporting satisfaction with transactions, and clients more actively seeking support.

Figure 6. Intermediaries beliefs on potential catalysts for buyer participation



Summary findings

1.

While sellers feel comfortable with the market and are actively pursuing or planning to participate in 2024, buyers are most likely to indicate that they need to learn more. That said, there is data to suggest that the tax credit market could see a significant boost in participation in 2024.

2.

Buyers are focused on understanding risks first and foremost. Most understand the benefits of a deal, but need to feel confident in their understanding of risk mitigation strategies to participate in the market. We see many buyers enter the market via advisors, demonstrating the need for intermediary expertise and education as it grows.

3.

The most common obstacles cited by buyers and sellers are the costs of due diligence and market transparency, but in nearly inverse proportions. This is particularly noteworthy since sellers usually cover the costs of due diligence (up to a fee cap). It's possible that some buyers are not aware, or that buyers are citing due diligence as a reflection of internal costs and the overall complexity of navigating an unfamiliar market.



04

Transferable tax credit deals in 2023

Transferable tax credit deals in 2023

Transferability & tax equity

There's been some speculation whether a market for transferable credits would emerge separately from the tax equity market. Tax equity is typically a more comprehensive means to monetize a project's tax attributes — a project can monetize tax credits and depreciation through a tax equity partnership — but only larger developers and portfolios have historically been able to access this form of financing. While many credits in our data set, particularly larger solar ITC deals and spot wind energy PTCs were likely sold by tax equity partnerships, we also saw many new market entrants who likely were not connected to tax equity. A large number of smaller deals — too small for a tax equity deal — took place in 2023. Many of these developers would not have been able to monetize their tax benefits pre-IRA. Direct transfers are simpler and less costly to structure than tax equity. Since credits may be sold by partnerships, transfers will expand upon and complement the market for tax equity.

Technology diversity

A much wider range of technologies earned tax credits for the first time in 2023, thanks to new and expanded rules in the IRA. Our data indicates that new credits and technologies were particularly popular last year. In the survey data and data from Crux, we observed a relatively large number of transactions in manufacturing tax credits (usually the 45X PTC) and bioenergy ITCs, which were only outpaced by the number of stand-alone solar tax credit deals.

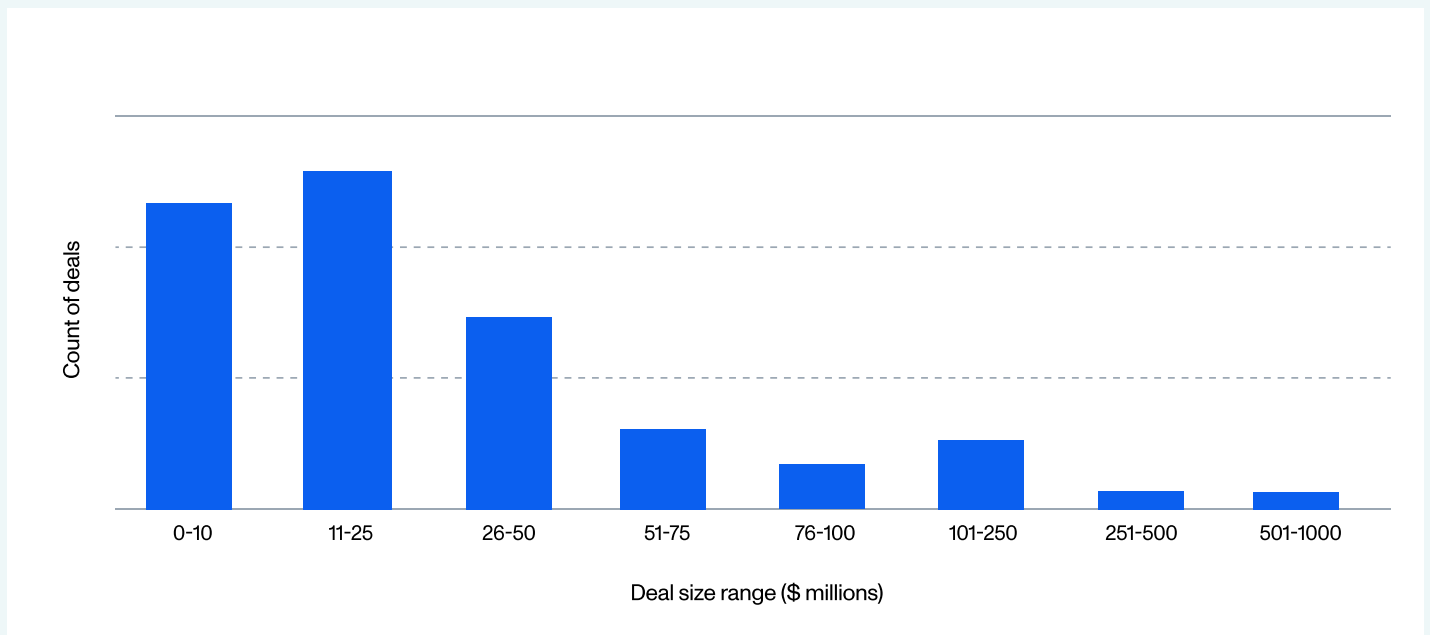
Credit pricing determinants

Credit pricing follows some rules and breaks others. Spot wind PTCs generally priced the highest in 2023. Some storage ITCs also priced favorably relative to the rest of the market. Generally, solar ITCs and wind PTCs are priced at a premium. Advanced manufacturing PTCs priced somewhat lower. Larger deals typically price higher than smaller deals, but not always — sponsor credit quality can easily shift a smaller credit up the price curve. New technologies generally price lower than established technologies of the same credit type. In short, a lot of factors contribute to setting a “market price” for a credit, and not all credit types have enough market liquidity to speculate. Based on our transaction data, Crux developed detailed market pricing curves for the most common advanced manufacturing, wind, solar, storage, and bioenergy credits, and will continue to periodically update our models to support more transparent pricing.

Deal size

By transaction count, credit transfers in 2023 skewed heavily towards sub \$50 million deals. Approximately 80% of the transactions for which we received data involved credit sales with a face value of \$50 million or less.

Figure 7. Distribution of deals by size



Historically, tax equity has not been available, or has been exceedingly expensive, for many projects or portfolios with less than \$50 million of credit value. New technology types — manufacturing, energy storage, biofuels, and electric vehicle equipment — qualify for tax credits for the first time. Credit volume for these projects often falls below \$50 million. It’s not surprising, then, to see the deal count clustered below \$50 million in the initial data. 2023 was also a unique year — most large wind and solar projects with credits to sell in 2023 received committed funding from tax equity partners before the year began and may not have had credits to sell.

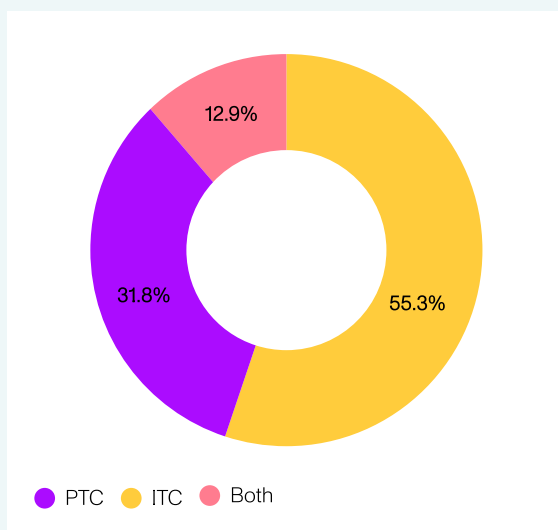
Several large transferable credit deals were publicly announced in 2023. Those deals suggest transferability may become a more common feature for project financing, including within a tax equity partnership. We are already observing hybrid structures where a partnership is formed to monetize both tax credits and depreciation. In these structures, the tax credits can be sold by the partnership or allocated to the partners at their discretion. Many such deals are anticipated to come to market in 2024.

Credit types

Overall, just over 55% of the transactions in the analysis are ITC deals. 32% are PTC deals and 13% involve a combination of PTC and ITCs (Figure 8).

In cases where both ITCs and PTCs were purchased as part of a single transaction, the credits were often related to newly eligible clean energy projects and manufacturers: advanced manufacturing, biofuel projects, and hybrid solar and storage, to name a few examples.

Figure 8. Deals by credit type



By contrast, projects electing PTC tended to skew larger given the prevalence of the credit type for wind and larger solar projects. The reported deal sizes also include the full 10-year expected value. While our data consists of only a few deals over \$100 million, we found substantially all reported deals included either a mix of PTCs and ITCs or PTCs alone.

These larger deals may often reflect greater complexity and sophistication among the parties. The data, as well as [public commentary](#), suggest that these large tax credit deals may occur in the context of larger financings or M&A.

Summary findings

1.

ITCs were the most frequently sold credits in 2023, accounting for just over half of all deals in the dataset, and skewed smaller. Larger deals, by contrast, tended to be PTC deals (reflecting multi-year PTC strip sales). We also observed some large reported deals, such as hybrid solar and storage deals, which claimed a mix of ITCs and PTCs.

2.

The significant majority of tracked deals in our data set were under \$100 million, accounting for just over \$1.5 billion in aggregate deal volume. Deals over \$100 million, however, due to their significant size, accounted for a larger share of total deal volume — \$2 billion in reported deals.

3.

Many ITC deals under \$50 million were likely not backed by tax equity sponsors. Some are projects which are newly eligible to generate tax credits while others are simply too small. Their participation in the tax credit market illustrates how the transferability provision levels the playing field for smaller projects and non-traditional technology types.

Tax credit characteristics: basis, bonus, and insurance

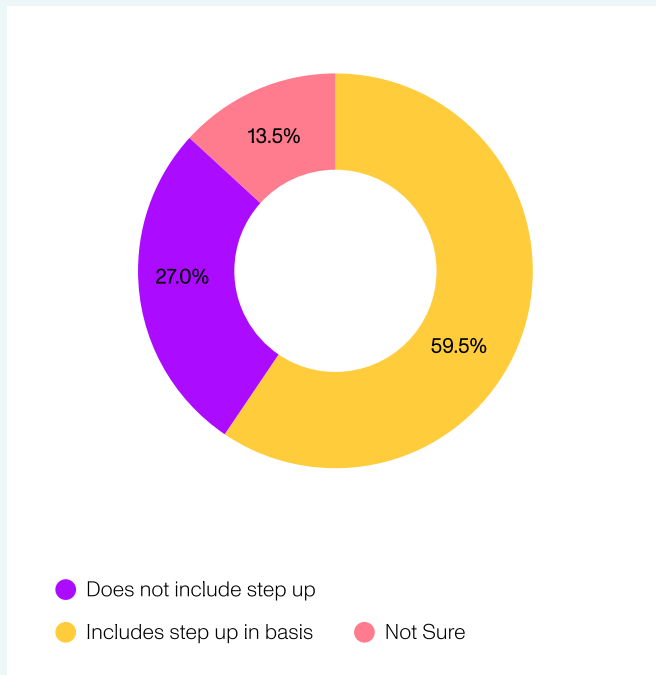
Eligible basis

Historically, many tax equity-funded projects utilizing the ITC claimed it on a step-up in cost basis (around 15%-20% over the baseline cost of construction, or hard costs) reflecting the projects' fair market value inclusive of development premiums.

For transferable credits, many developers look to understand how a third-party investment might substantiate a higher cost basis and therefore higher ITC value. We are beginning to hear of investors seeking to make minority investments in projects, which may serve as third party validation of a higher fair market value for depreciation and ITC basis.

We asked each survey respondent that participated in an ITC transaction whether or not the ITC value was calculated off of a step-up in basis. Figure 9 illustrates the proportion of deals that included a step-up, which did not, and where the respondent did not know.

Figure 9. Share of ITC deals including a step-up in basis



The majority of transactions (nearly 60%) included a step-up in basis.

At least some ITC deals in 2023 were syndicated out of tax equity partnerships and minority JV structures (where it is common to step-up projects' cost basis). The proportion of ITC projects that obtained a step-up in their projects cost basis likely represents this share of the market.

Bonus tax credits

There are four primary bonus tax credits:

- 1 . Prevailing wage and apprenticeship bonus (PWA)
- 2 . Domestic content bonus
- 3 . Energy communities bonus
- 4 . Low income communities bonus

The first three bonuses are available to a wide range of clean energy projects, including all those eligible for the Section 45 PTC and Section 48 ITC. The low income communities bonus, also known as 48(e), is available to wind or solar projects up to 5 MWac meeting certain requirements. Projects must submit an application to DOE and receive an award for the low income communities bonus credit, and allocations are capped at 1.8 GW per year of the tax credit.

Figure 10 details the base credit values for all currently transferable tax credits and the bonuses, where applicable.

Figure 10. Summary of credit types and eligible bonus adders

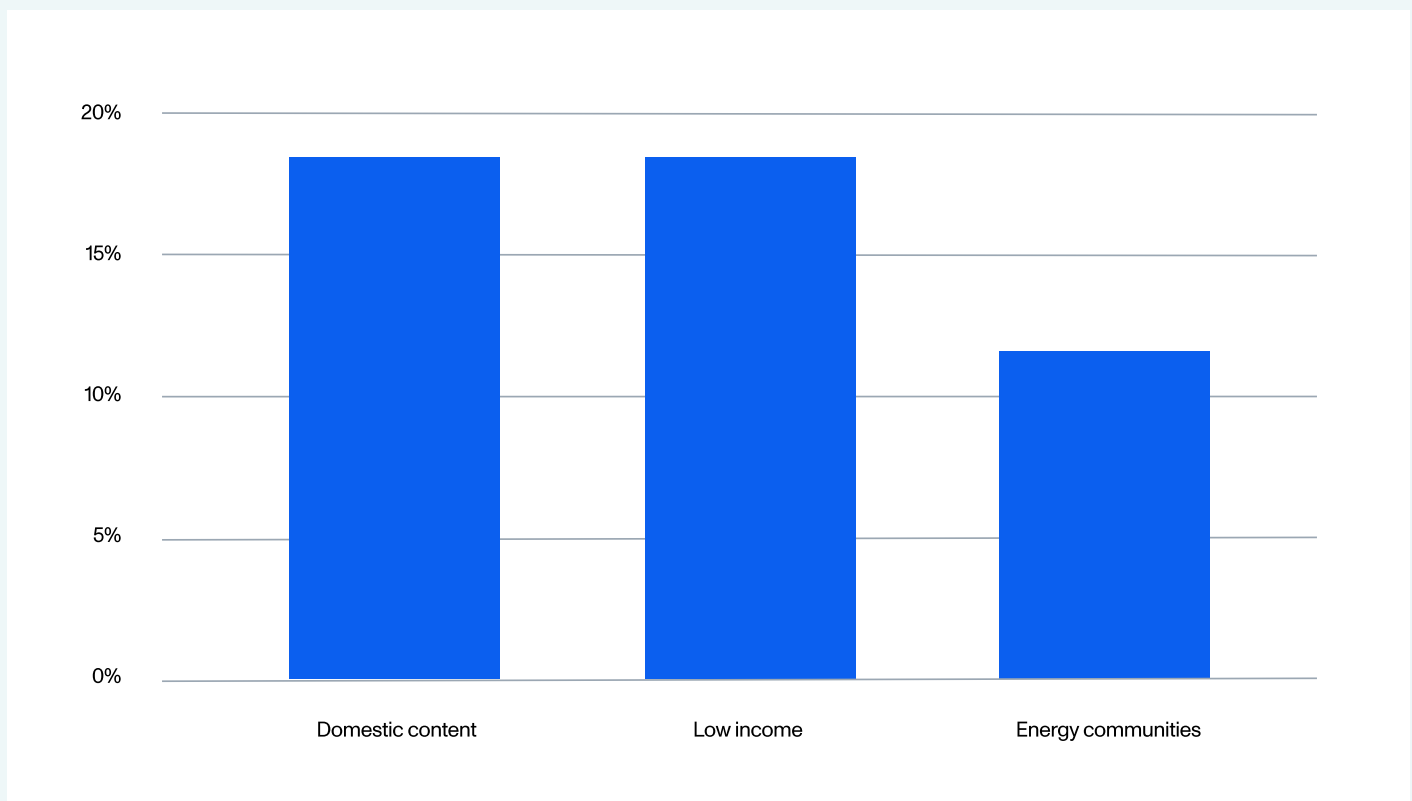
Tax credit	Section	Base value *	Bonus Adders		
			PWA	Domestic content	Energy communities
Renewable electricity PTC	45	0.03 c/kW	5 times the base rate	10% bonus	10% bonus
Energy Property ITC	48	6% of qualified investment (basis)	5 times the base rate	10% bonus	10% bonus
Low income communities bonus	48e	6% of qualified investment (basis)	For solar and wind facilities up to 5 MW. Capped at 1.8 GW per year Credit is increased by 10 percentage points for projects located in low-income communities or on Tribal land Credit is increased by 20 percentage points for projects that are part of certain federally subsidized housing programs or other eligible property		
Nuclear PTC	45U	0.03 c/kW **	5 times the base rate		
Advanced energy project ITC	48C	6%	If met, 30% base credit		
Advanced manufacturing PTC	45X	Varies by product			
Alternative fuel vehicle refueling property	30C	6% of the cost for businesses, limited to a \$100,000 credit per item of property	If met, 30% base credit		
Clean fuel PTC	45Z	Base amount is \$0.20/gal (non-aviation fuel), \$0.35/gal (aviation fuel) Multiplied by emissions factor of fuel	5 times the base rate		
Carbon oxide sequestration PTC	45Q	\$12/ton for EOR / \$17/ton for CCS DAC projects get \$26/ton for EOR / \$36/ton for CCS	5 times the base rate		
Clean hydrogen PTC	45V	\$0.60/kg multiplied by the applicable emissions percentage (20% to 100%)	5 times the base rate		
Taking effect in 2025					
Clean electricity PTC (technology neutral)	45Y	0.03 c/kW	5 times the base rate	10% bonus	10% bonus
Clean electricity ITC (technology neutral)	48E	6% of qualified investment (basis)	5 times the base rate	10% bonus	10% bonus

* PTC base values are adjusted for inflation

** Nuclear PTC phases down depending upon the amount of energy produced and the nuclear plant's gross receipts

Survey respondents were asked whether their projects were eligible for any of the four bonus tax credits. Figure 11 illustrates the proportion of respondents who reported that they claimed the domestic content bonus, the low income communities bonus, or the energy communities bonus tax credit. Projects claiming the ITC who started construction before January 29, 2023, as many projects did, were allowed to claim the base 30% ITC rate without demonstrating that they met the requirements for the PWA adder.

Figure 11. Percentage of deals claiming bonus tax credits



Domestic content requirements were reported in about 18% of all deals, across technology types, and virtually all respondents indicated that they achieved confidence that the project was eligible for the bonus through the preparation of a legal opinion.

Low income and energy communities bonuses are available for certain ITC and PTC credits. The data indicates that a surprisingly large proportion of projects (just over 18%) incorporated the low income communities bonus. This is particularly interesting given that the low income communities bonus is administered by the Department of Energy and had not been awarded at the time of the survey. We are aware of certain deals that reflect a total credit value inclusive of the anticipated bonus.

Typically, a deal can be structured to allow the buyer and seller to increase the deal size if regulatory approval is received afterwards. Nonetheless, this data may reflect some confusion among market participants. In particular, income measures also factor into whether a given community qualifies as an “energy community” for the purpose of calculating that bonus. The higher-than-expected reporting of the low income bonus could be an example of misunderstanding, where the project technically qualified for the energy communities bonus instead. Just over 10% of reported deals indicated that the project was eligible for the energy communities bonus tax credit. Most of these projects were solar projects, though some fuel cell and wind projects also reportedly met the requirements to claim the energy communities bonus.

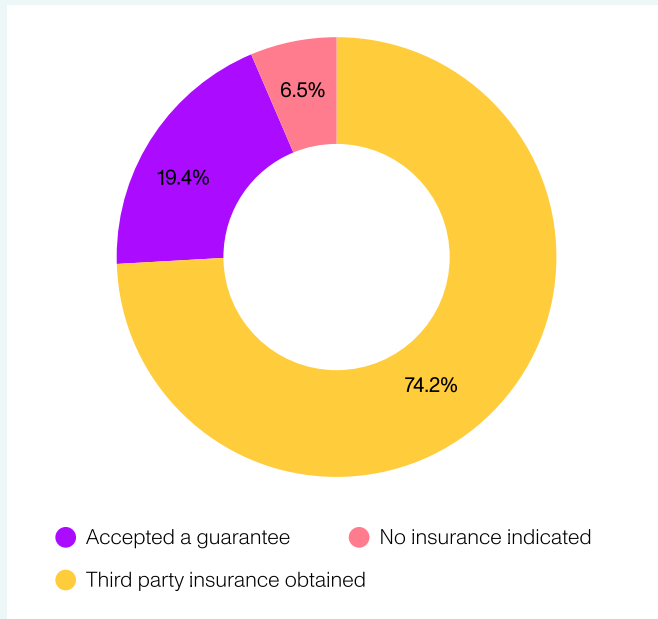
Crux’s take: 2024 is the first year when we would expect that the large majority of projects must satisfy PWA requirements in order to claim the maximum bonus (many PTC and ITC projects get a bonus for meeting the PWA requirements). We expect the language around energy communities and the low income tax credit to mature, as well as more developers seeking these bonuses with targeted projects.

Insurance

Insurance is an important aspect of a tax credit transaction and is often procured at the expense of the seller to the benefit of the buyer. Not only does an insurance policy protect the tax credit buyer against a range of risks — transaction-specific risks such as recapture and more common M&A risks — it also can complement and streamline due diligence. These insurance policies will help attract more buyers to the market and may make deals more fungible over time.

Transferable tax credit transactions are meant to be simpler and more streamlined than tax equity partnerships, but due diligence is still a factor in every transaction. Most deals in our data set report obtaining some form of insurance or a guarantee from a project sponsor in lieu of insurance, illustrated in Figure 12. In 6.5% of transactions, no insurance or parent guarantee were reported.

Figure 12. Proportion of ITC and PTC deals reporting insurance or sponsor guarantee



Note: data in Figure 12 does not reflect reported transactions that included a combination of both ITCs and PTCs.

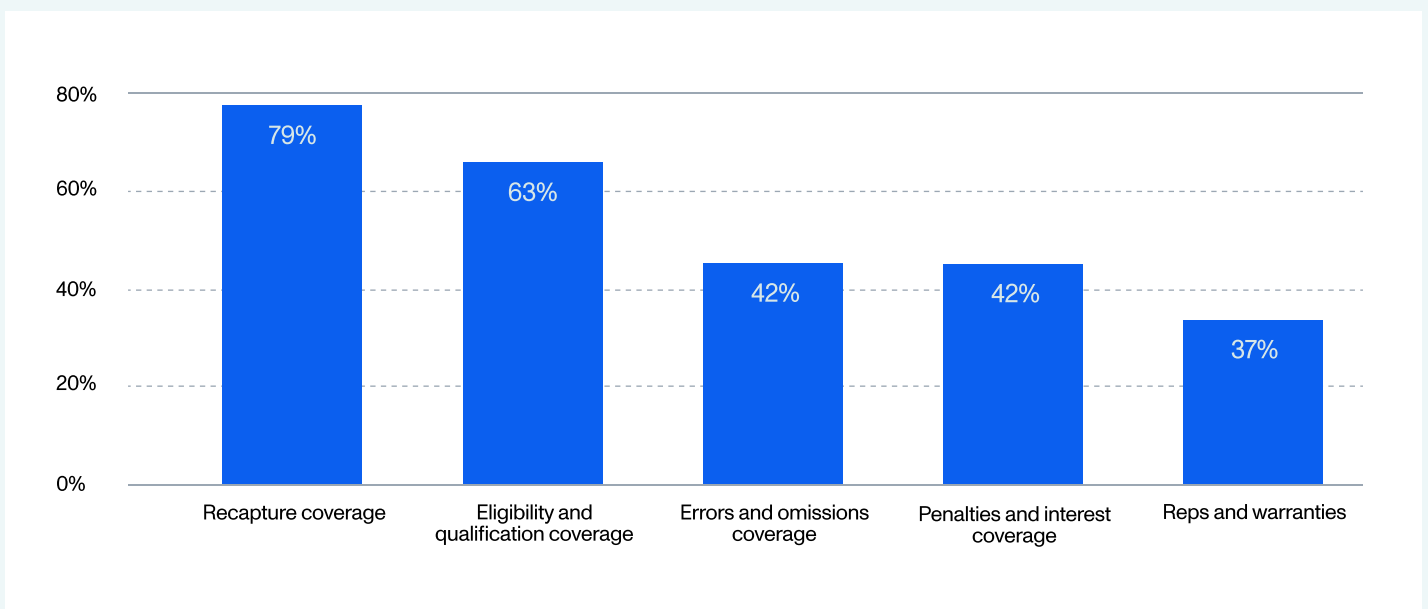
Insurance is generally more common in ITC deals. Over 95% of 2023 ITC deals reported that they obtained third party insurance or a sponsor guarantee in lieu of insurance. Third party insurance costs are typically covered by the seller.

Recapture risk is commonly covered with insurance. Recapture occurs when a project that has claimed the ITC is taken out of service and not returned to service within the first five years of operation. Recapture risk is an important consideration for tax credit buyers, who bear the responsibility for a recapture event on the purchased tax credits. A recapture event in the first year after a project is placed in service carries a penalty worth 100% of the tax credit value, and this penalty scales down by 20 percentage points annually over five years. Recapture has been a risk in tax equity deals before transferability. The observed incidence of recapture has historically been quite low.

In June 2023, the IRS clarified that asset sales would not trigger recapture penalties for credit buyers in the context of transaction in transferable tax credits, but recapture remains an issue. Fortunately, insurance is common. Nearly 80% of transactions in investment tax credits that included insurance also included recapture coverage (Figure 13).

Crux’s take: In our experience, insurance is standard with most ITC deals, including both recapture and eligible basis coverage. Observed exceptions generally involved large creditworthy sponsors making strong indemnities. Insurance policies can be complex, and not all parties to a transaction may be familiar with all aspects of the insurance policy. We did not observe any significant trends among deals where more insurance was reported.

Figure 13. Insurance provisions included in ITC deals (where third party insurance was obtained)⁽⁸⁾



⁸ Note that penalty and interest coverage coverage may also be embedded in the underlying insurance, and sized to cover both, and thus may not be a separate endorsement or policy.

Insurance policy costs currently range from 1% to 3% of the transaction value. Higher cost insurance is more common for smaller projects and/or comprehensive insurance policies, where there is less transaction value over which to spread underwriting costs and required margins.

Eligible basis risk is also commonly covered in ITC insurance. Eligible basis insurance covers the scenario where the IRS may determine that a project overstated its cost basis, either by including ineligible costs in the cost basis or by overstating its fair market value. In this circumstance, the IRS may find that a project has generated excessive credits and claw back the excess.

Buyers of tax credits take on eligible basis risk, and 63% of transactions reported obtaining specific insurance to cover that situation.

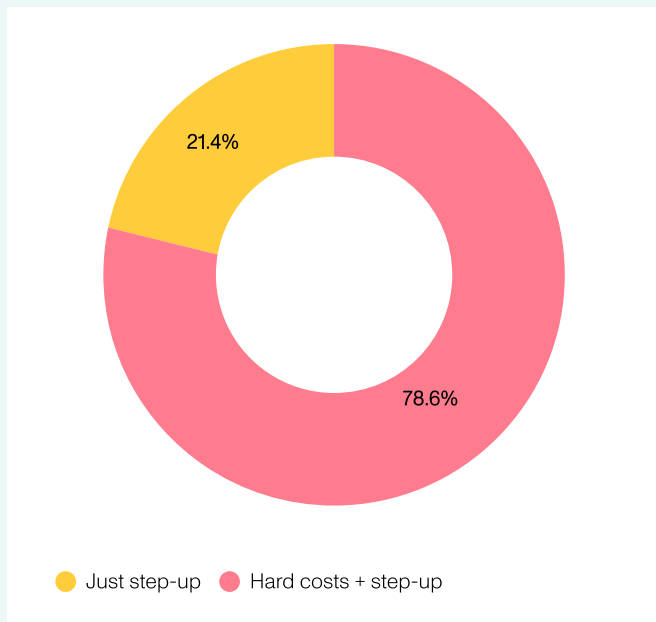
Importantly, the IRS assesses penalties for projects (or credit buyers) where excessive credits were generated. Buyers who demonstrate that they conducted reasonable due diligence — where they had reasonable cause to believe that the credits purchased were not excessive — can avoid this penalty. Technology used for due diligence will be helpful to buyers looking to prove diligence was performed.

Some tax credit buyers waive the requirement that the seller obtain insurance, and instead seek to obtain their own (often bundled) insurance policy covering a portfolio of underlying projects. This novel approach may carry some additional risk for the buyer, and generally brings with it a higher diligence burden, but also likely enables the buyer to obtain credits at lower cost and obtain some economies of scale on the insurance which might not be available to an individual seller.

All projects that reported that their deal included a step up-in basis were asked whether their eligible basis insurance insured the project's hard costs or only the step-up in basis. Early in the market, developers often hoped they could just insure step-up, while buyers — many of whom are new to market — wanted to have a full wrap on the transaction value.

For now, the reported data suggests that the market leans towards buyers' conservative approach (Figure 14).

Figure 14. ITC eligible basis insurance: hard costs or not?



For deals with basis step-up, 78.6% insured hard costs and step-up value and 21.4% only insured the risks associated with the step-up.

Note: data in Figure 12 does not reflect reported transactions that included a combination of both ITCs and PTCs.

Summary findings

1.

Tax credit deals typically include some form of insurance for the buyer – either a third-party insurance policy or a project sponsor guarantee in lieu of insurance.

2.

Insurance is an important component of risk management for buyers of tax credits, and is very common for ITC deals in particular. Policies typically cover the risk that tax credits are subject to recapture in case a project is taken out of service within the first five years.

3.

Most ITC projects claiming a step-up in basis were syndicated out of a tax equity partnership in 2023. Credit buyers more often sought comprehensive insurance coverage for project hard costs and the step-up.

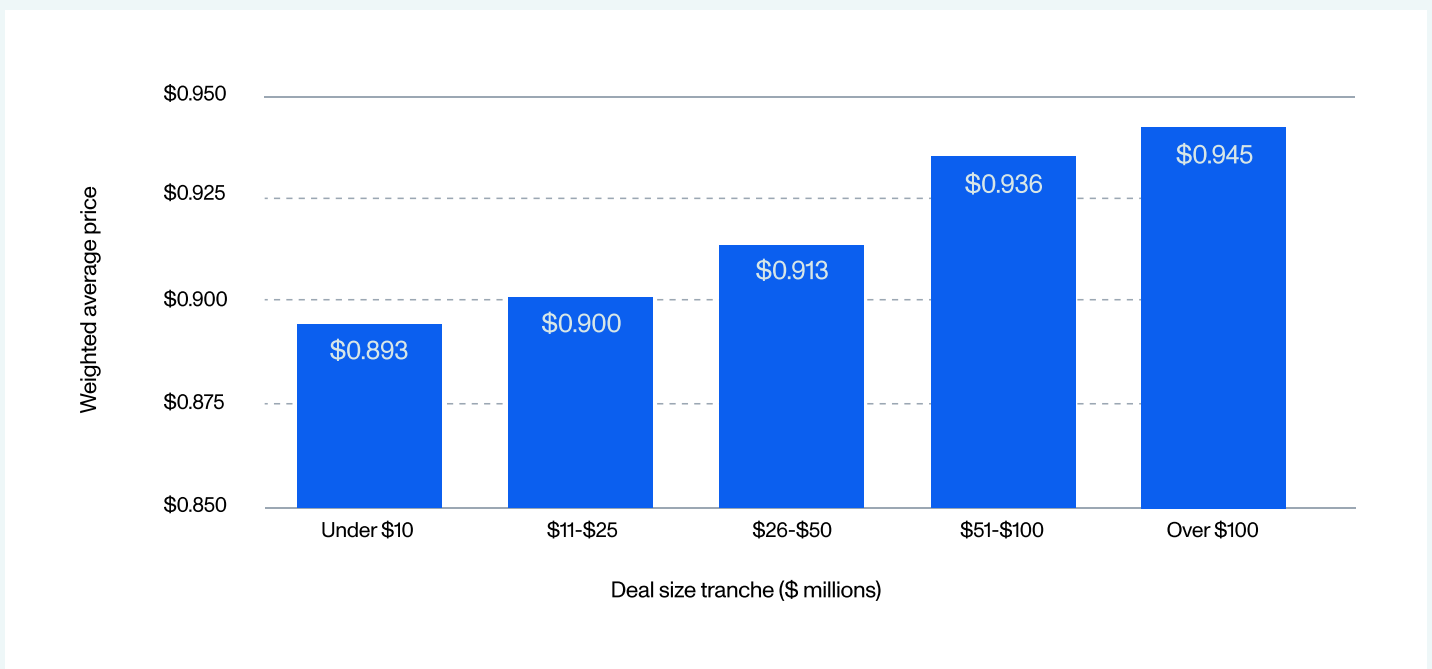
Credit pricing

As previously noted, pricing data is reflective of the point in time the survey was completed and activity observed on Crux over the period. Demand was especially strong at the end of 2023, which is reflected in our data. All pricing is reflective of pricing paid by buyers (“gross price”), which is higher than the price received by buyers after fees (“net price”).

The relationship between pricing and deal size

Deal size is an important factor influencing credit pricing, though it is not the only one. Figure 15 illustrates the average gross price paid by the buyer per dollar of credit value. Though data for deals over \$50 million is not separately broken out given a relatively small share of respondents in the dataset, pricing on the largest deals may reach as high as \$0.96 in certain cases.

Figure 15. Average credit price (gross, per dollar of face value) by deal size



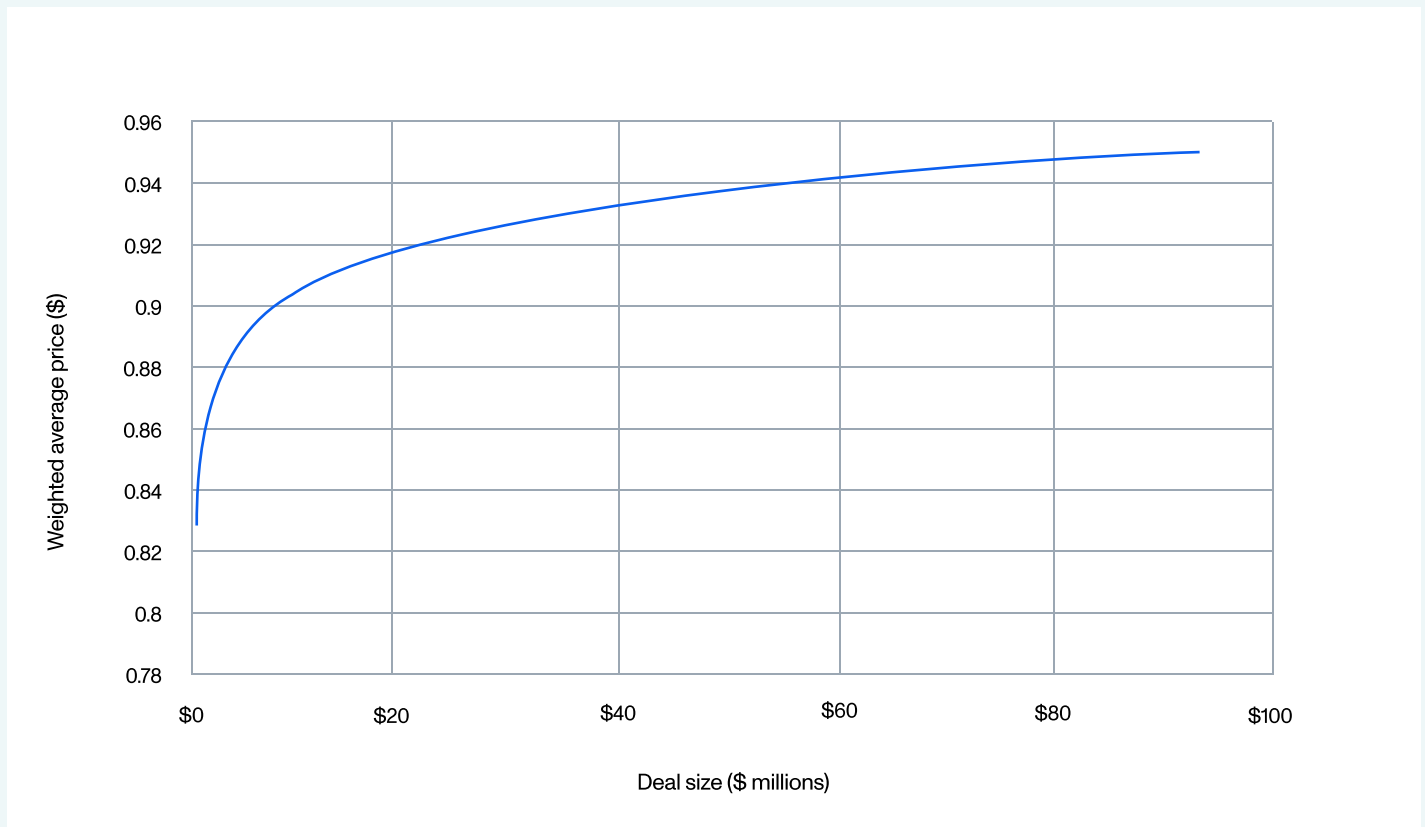
Smaller deals tend to price lower than larger deals up to about \$50 million in face value. Projects with less than \$10 million worth of credits for sale typically received a gross price under 90 cents — on average, 0.89 cents per dollar of credit.

The largest number of credit deals were between \$11 and \$25 million face value, and averaged around 90 cents per dollar of credit. Projects worth \$26-\$50 million averaged just over 91 cents. Deals between \$51-100 million averaged 93.6 cents per dollar of credit, and deals over \$100 million averaged 94.5 cents.

Figure 16A depicts a modeled market pricing curve derived from all available ITC deal size and credit price data. Figure 16B depicts the same for all available PTC deals.

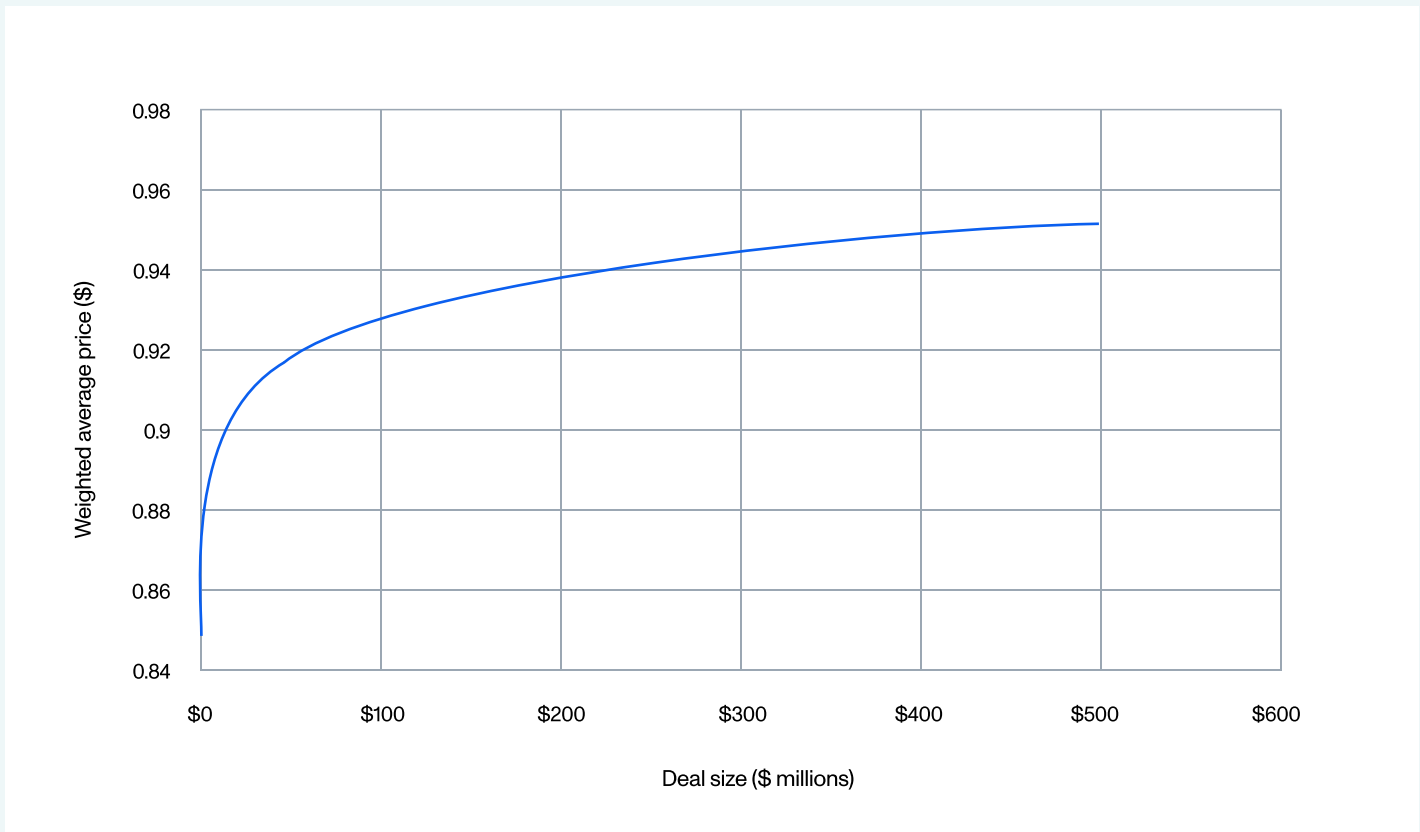
In our sample, the average ITC deal in 2023 tax credits was valued at \$20 million, and buyers paid 92 cents per dollar of tax credit. The average PTC deal was valued at \$60 million, and buyers paid 94 cents per dollar of tax credit. ⁽⁹⁾

Figure 16A. Market pricing curve for ITC deals



⁹ Average credit price here and throughout refers to the weighted average. Where transaction value cannot be determined, the deal entry is excluded from market pricing analysis.

Figure 16B. Market pricing curve for PTC deals



Technology and credit type affect credit price

Market pricing for tax credits depends on more than just deal size. Credit type (ITC versus PTC) and technology type have a significant impact on overall price. In particular, transaction data indicates that deal size and technology type, together, produce a more accurate forecast of credit price.

As for credit type, ITC pricing tends to reflect the fact the buyer assumes the risk that the credit value is recaptured or that the IRS disputes the eligible basis. As a result, sellers of ITC credits are likely to purchase insurance protecting the buyer against recapture risk; the costs eat into the net credit pricing for the seller. Figure 17 illustrates key statistics from Crux’s complete deal data set for 2023, including average deal size and credit price by technology and credit type.

¹⁰ Several transactions were reported “other” technologies, including fuel cells or hybrid solar and storage, or with a combination of PTC and ITC credits. This data is not directly comparable to the contents of the table.

Figure 17. 2023 Average deal size and credit price by technology and credit type⁽¹⁰⁾

Technology	Credit type	Average deal size (\$ millions)	Average credit price
Wind	45 PTC	\$82.3	93.4 cents
Solar	48 ITC	18.32 (including C&I) \$50 (utility scale only)	90.7 cents (including C&I) 92 cents (utility scale only)
	45 PTC	Too few observations	
Energy storage	48 ITC	\$48.25	94 cents
EV charging	48 ITC	\$9.25	91 cents
Bioenergy	48 ITC	\$18.28	90 cents
Advanced manufacturing	48C ITC	\$24.12	Too few observations
	45X PTC	\$19.97	89 cents

The role of competition in clearing the market

Market pricing for transferable credits is subject to a number of factors, including deal size, credit type, and technology. Individual factors, like project location, placed-in-service timing, and sponsor credit quality can also influence pricing for individual projects. Demand, too, is critically important and is not homogenous; virtually all tax credit buyers approach the market with at least some preferences regarding the kinds of credits they're willing to buy.

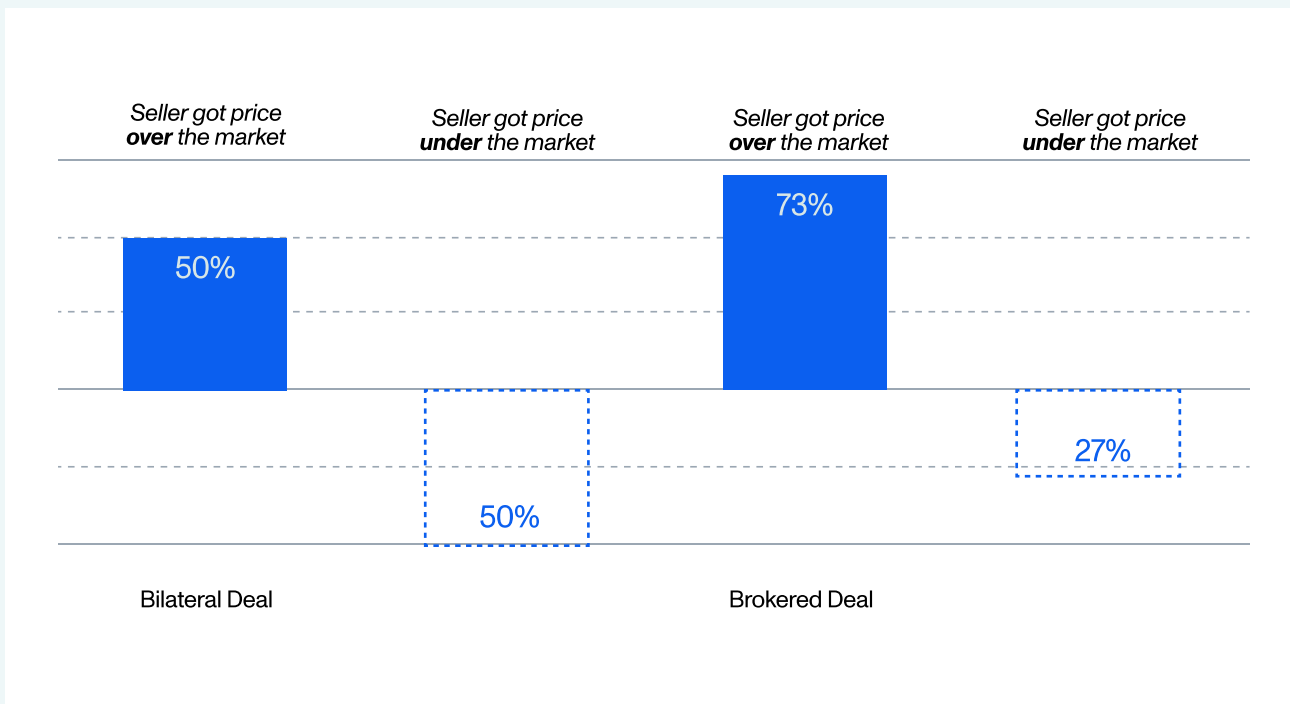
The market for tax credits is not as efficient and transparent as it should or will be. As a consequence, it can be difficult for credit sellers in particular to know whether they're getting a "good deal" for their credits. (No wonder, then, that 70% of project developers cited "market transparency" as an obstacle to selling their tax credits.) In order to function properly and efficiently, the market for tax credits needs to cultivate competition through the aggregation of supply and demand, which can best be done by technology like Crux.

Over the course of 2023, our team observed that competition can be an important driver of value for tax credit sellers. Sellers that are able to solicit multiple expressions of interest from a wide range of buyers are frequently best positioned to exceed market

pricing for their credits. Our data suggests that sellers working with an intermediary and/or via Crux got better-than-market pricing more often than if they worked directly with a buyer (i.e. bilaterally). Competition and representation may come at some cost, but outcomes tend to be better in less liquid asset classes.

As Figure 18 illustrates, sellers got a higher price 45% more often on credits sold through Crux or otherwise intermediated than through bilateral deals.

Figure 18. Proportions of bilateral and brokered transactions at above market pricing



Crux’s take: Large developers with established relationships do better than smaller developers in bilateral deals. Still, evidence is strong that competition drives enhanced pricing. When listed, large credits issued by large developers have received substantial interest on Crux, which has enabled faster price discovery and better outcomes.

To compare the returns from brokered versus bilateral deals, one can compare reported deal pricing with Crux's proprietary market price forecast. Deal prices that exceed the calculated market price are noted as being priced "over market" and deal prices that fall below the market price are noted as being priced "under market." Deal prices that were statistically equivalent to the market price forecast were excluded.⁽¹¹⁾

The analysis indicates that sellers in brokered or listed transactions got better-than-market pricing in 73% of deals, and below market pricing in 27%. In bilateral deals, sellers got better than market pricing about half of the time and below market pricing half the time. The data bears out our team's qualitative market observations — there is more demand in the market than supply, so consequently, competition for tax credits generally advantages sellers.

While buyers may pay a higher average gross price in intermediated transactions, they also receive value in the form of diligence, deal management, and credit selection. Credits selected by intermediaries may have favorable risk/return attributes, making them more competitive. Further, buyers can more easily demonstrate they received a fair price if the credits were sourced with help from an intermediary and/or transacted in an open market.

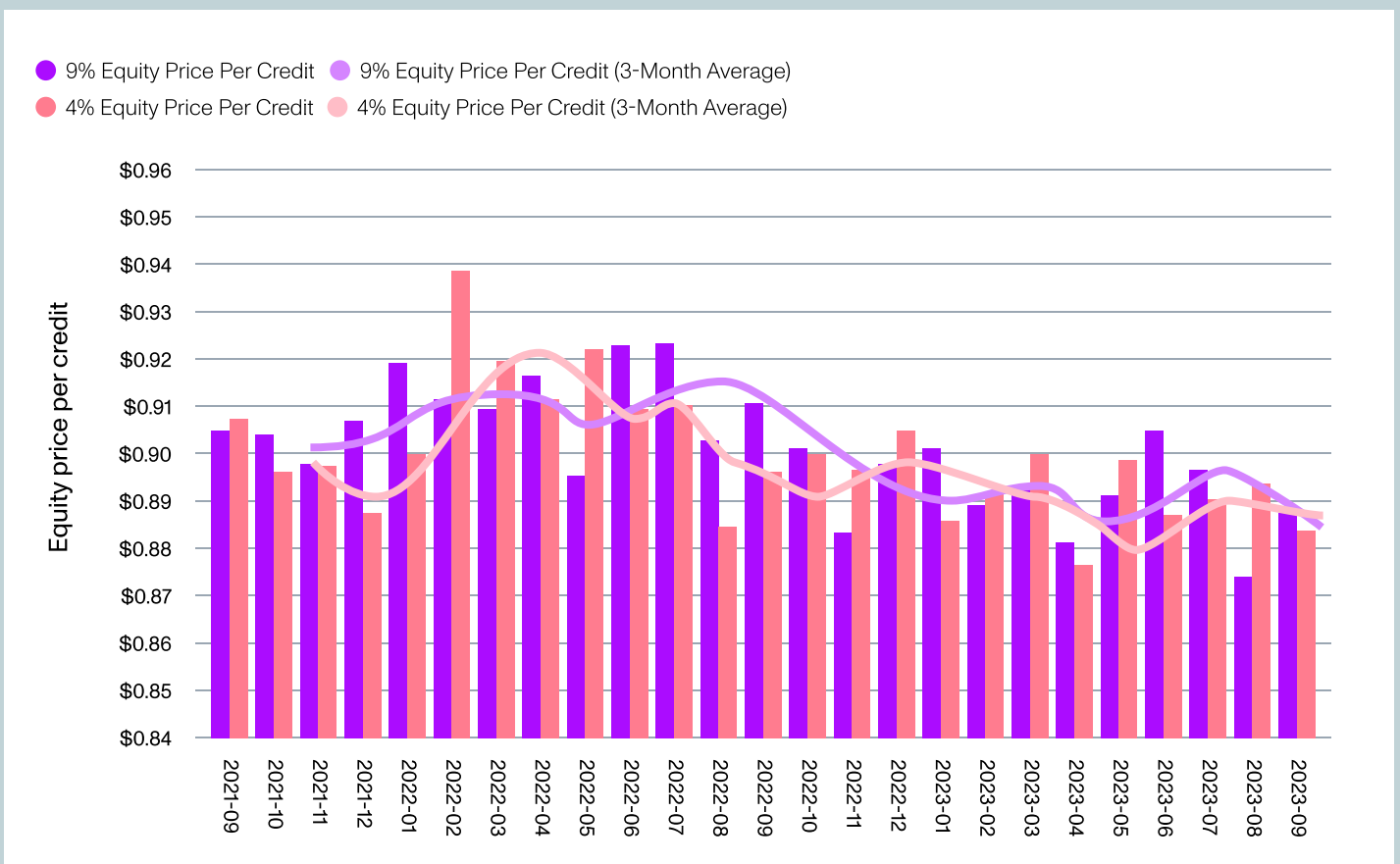
Crux's take: Bids can differ in many respects: price, timing of payment, potential for follow-on deals, and more. In 2023, 37% of projects on the Crux platform received multiple bids. On average, sellers with multiple bids saw at a 3-6% improvement in bid price. Sellers don't always take the highest priced bid. Factors like certainty of closure, opportunities for future deals, or aligning on payment timeline can help a buyer differentiate their bid.

¹¹ Two deals were priced effectively at the calculated market price, or with a difference of less than \$0.005. One deal was a brokered deal and one deal was a bilateral deal.

Case study on LIHTC pricing

Low Income Housing Tax Credits (LIHTC) were first introduced in the Tax Reform Act of 1986 and have been an important tool for affordable housing development since then. These credits have been extended many times by bipartisan configurations of the House, Senate, and Presidency. Though technically transferable, the program is smaller and operates differently from the new market for clean energy tax credits. Still, historical pricing trends demonstrate variability in pricing over time. Factors that have influenced pricing include interest rates, expectations of future tax payments, and policy factors – such as the attractiveness of the program for Community Reinvestment Act (CRA) purposes. The current moving average calculated by Novogradac is around \$0.89 per dollar of credit for both 4% and 9% tax credits (Figure C-1). Such pricing is similar to what is observed in many state tax credit markets. It’s a good sign the current averages in the new market for clean energy tax credits are already pricing at similar levels.

Figure C-1. Historical credit pricing for 4% and 9% equity low income housing tax credits



Summary findings

1.

Market pricing is actively evolving. Traditional wind and solar tax credits (PTCs and ITCs, respectively) have the greatest convergence towards a predictable market price, where deal size is positively correlated with credit price. Newer credit-generating technology types — especially stand alone energy storage, bioenergy, and advanced manufacturing credits — show greater variance between deal size/credit price, suggesting that an efficient market has not yet taken shape.

2.

Newer credit types tend to sell at a discount, suggesting that categories where guidance is not yet stabilized may be experiencing downward pressure on credit prices. We expect that once guidance is finalized and the industry incorporates the final rules, credit prices will converge towards others of the same type — ITCs towards ITCs and similar (spot vs. strip) PTCs towards PTCs.

3.

In a tight market, competition benefits sellers. Our survey data reflects that brokered deals (through an intermediary or via Crux) tended to produce above market pricing about 45% more frequently than bilateral deals. Buyers also receive benefits from intermediated or platform transactions, including diligence support, deal management, and credit selection.



05

2024 market outlook

Regulatory guidance

Sellers of tax credits and intermediaries, in particular, report that they are closely monitoring regulatory guidance from the IRS finalizing transferability rules, the use of bonus adders, and guidance for specific tax credits. Guidance has driven market formation — we've observed an apparent discount for tax credits which do not have finalized regulatory guidance. The market is still developing for some newer credit categories. In some cases, those technologies are anticipated to emerge and scale over the coming years and IRS guidance remains to be issued and finalized in some instances. Certain credits (45X, 45V, and 45Q) are also alternatively eligible for direct pay for a limited period.

Divergent expectations

Market participants have different predictions for 2024. Buyers are much more likely than sellers to predict that market prices will decline in 2024. However, a number of macro drivers would suggest that prices are unlikely to sag throughout the year. Final guidance, a spate of new market entrants, and purpose-built financing mechanisms to take advantage of the benefits of transferability suggest that we may see a rise of unique and strategic deals in 2024.

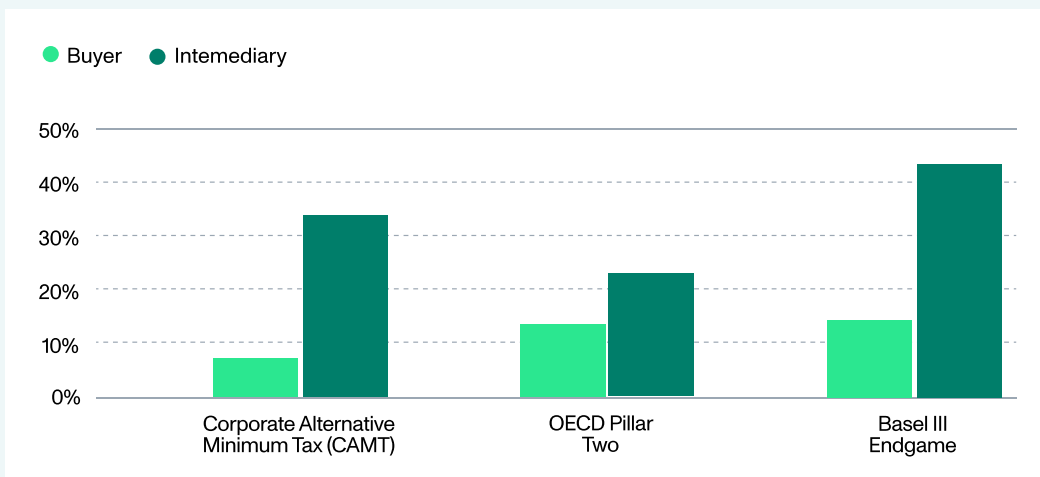
Importance of intermediaries

Buyers who are better apprised of market risks are also better at navigating the market and capable of bidding more competitively. Intermediaries can support the adoption of standardized terms and processes. Early alignment on deal terms may be particularly valuable given the variance between buyer and seller market expectations.

2024 regulatory guidance outlook

In the evolving tax credit marketplace, guidance plays an important role in driving market certainty and transparency. We sought feedback on the significance of new guidance for certain clean energy tax credits, bonus adders, and transferability, in addition to supra-national tax rules like the forthcoming Basel III Endgame standards and Organization for Economic Cooperation and Development’s (OECD) Pillar Two rules (Figure 19).

Figure 19. Percent of buyers and intermediaries monitoring notable tax credit rules not related to transferability

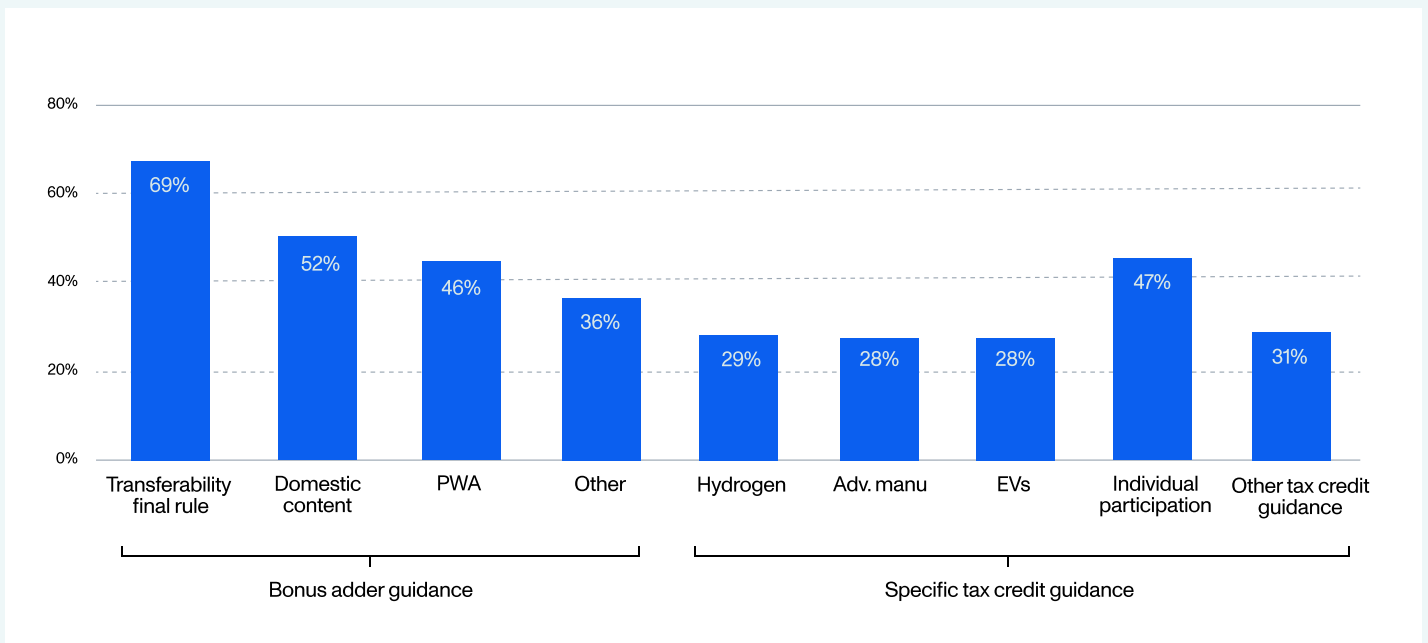


In general, intermediaries were more likely than tax credit buyers to be monitoring tax guidance. A large proportion of intermediaries are keeping an eye on the Basel III endgame requirements and on the implementation of the new US Corporate Alternative Minimum Tax (CAMT), which was included in the IRA alongside clean energy tax credits. In June 2023, the OECD published [guidance](#) proposing that transferable clean energy tax credits be treated favorably under the Pillar Two structure. This may help explain why roughly half as many intermediaries are monitoring the Pillar Two final rules relative to the CAMT or the Basel III rules.

Transferability guidance

A significant majority of the market is actively monitoring guidance related to transferable tax credits (Figure 20). Fully 68% of the market is following the finalization of rules governing transferability, which the IRS proposed in June 2023. Additionally, a majority of market participants are watching for final guidance for applying the Domestic Content bonus adder, which entitles a developer of a project claiming investment tax credits to get a boost to the value of their credits (usually a 10% bump). Uncertainty around applying the domestic content bonus adder has limited its usefulness to project developers.

Figure 20. Percent of respondents monitoring upcoming transferable tax credit guidance



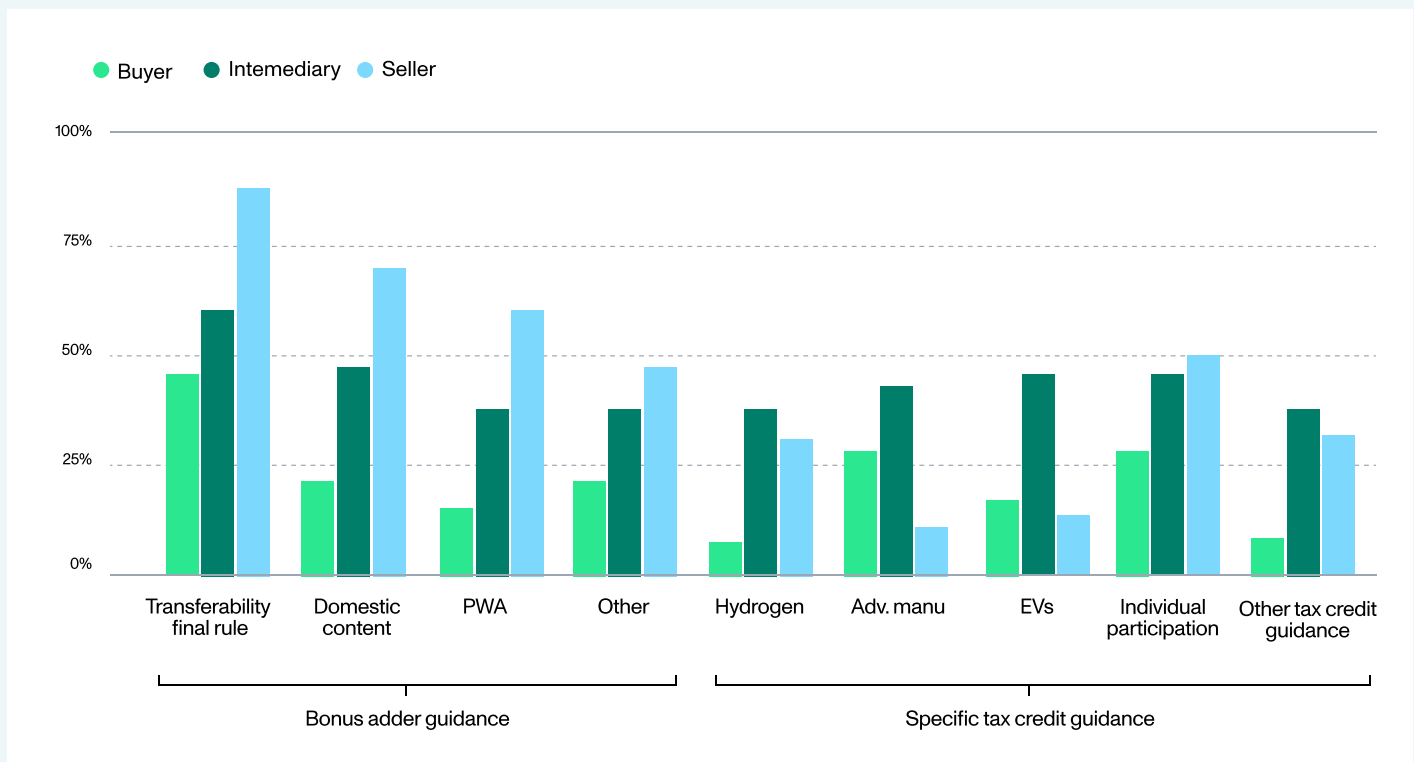
Looking at individual market segments tells a somewhat different story (Figure 21). Buyers are least likely to be monitoring tax policy guidance overall. Fewer than half are watching for final transferability guidance. Intuitively this may reflect that buyers often engage in the market for tax credits through advisors, who they likely rely upon to keep them abreast of relevant policy guidance, or are relying on insurance and indemnities and view this as primarily a seller risk.

Tax guidance is complex and technical: not an easy thing to quickly digest. That the majority of **buyers** indicate that they're not monitoring guidance at all may indicate an important vote of confidence in the market. Buyers don't necessarily need to understand every detail of transferability tax guidance to know they want to learn more, and to trust their advisors to support them.

Sellers, by contrast, are very closely monitoring transferability guidance. 87% of sellers are looking for IRS’s final transferability guidance, and a large majority (70% and 63%, respectively) are monitoring guidance for domestic content and PWA bonus adders. This makes sense, as sellers ultimately bear most guidance risks by providing indemnities and procuring insurance for impacted credits.

Intermediaries are more likely than sellers or buyers to report that they’re monitoring guidance for specific IRA tax credits, such as the 45V hydrogen production tax credit, the 45X/48C advanced manufacturing tax credits, or the 30D electric vehicle tax credit. The likely explanation is that sellers are compartmentalized; a solar developer is unlikely to also be developing a manufacturing facility or EV charging infrastructure, and so less likely to care about the guidance related to that equipment. Meanwhile, fewer of those project sponsors are yet active in the transferable credit market.

Figure 21. Percent of market participants by persona monitoring upcoming transferable tax credit guidance



A relatively larger proportion of sellers (30%) indicate that they are monitoring the publication of guidance governing the hydrogen tax credit, compared to 10% for advanced manufacturing or 13% for EVs. The hydrogen tax credit awards a PTC worth as much as \$3/kg of hydrogen produced for projects that can demonstrate that they have

a very small or negligible greenhouse gas emissions footprint associated with their hydrogen production.

At issue is whether a new hydrogen facility can use electricity produced from existing clean energy resources, or whether it must procure new generation from new resources (this provision, or “pillar” of the green hydrogen definition is often referred to as “additionality”). In guidance proposed in late 2023, the IRS indicated that it would require hydrogen facilities to demonstrate that their electricity needs are met by new, additional clean energy resources. As a consequence, hydrogen project developers may end up being customers to solar and wind project developers, creating an incentive for companies developing wind and solar projects to monitor this important new market.

Individual participation

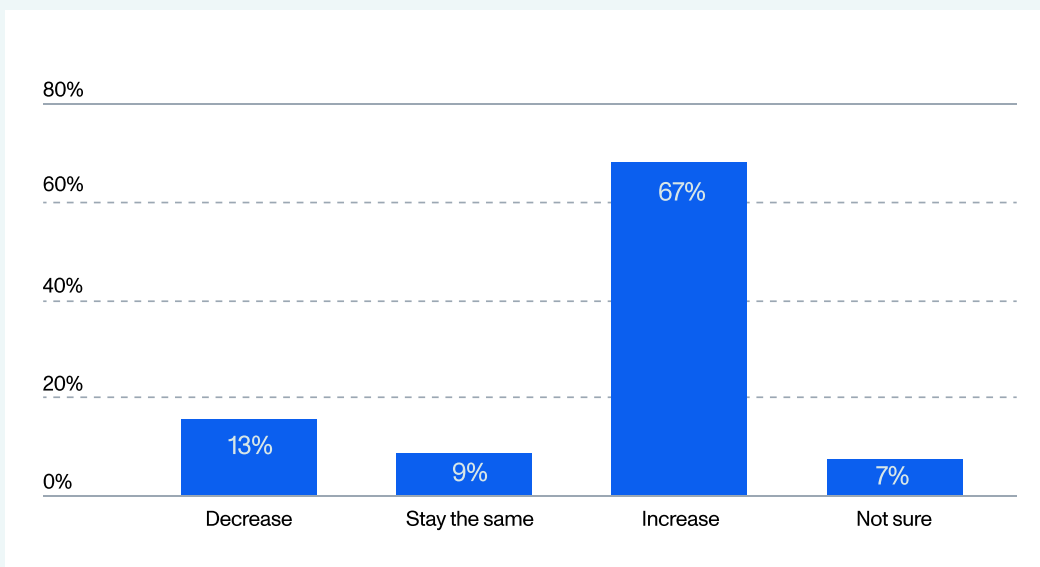
A relatively large share of the market (approximately 50% of sellers and intermediaries, and 30% of buyers) are monitoring whether rules will expand to enable a wider swath of individual taxpayers to purchase clean energy tax credits. At present, the IRS only permits individuals to use transferable tax credits to satisfy tax liabilities related to gains from passive activity. If the IRS were to expand this opportunity to permit the use of tax credits to offset tax liabilities related to ordinary or portfolio income, individual participation in the tax credit market would increase materially.

2024 deal size outlook

A majority of survey respondents (67%) expect deal size to increase in 2024.

This relative consensus may reflect that buyers, sellers, and intermediaries largely share the view that many market participants were engaging in a strategy to “test” the market in 2023, and may commit more time, energy, and tax capacity to fully exploring it this year (Figure 22). Additionally, some credit categories — like advanced manufacturing — are projected to ramp significantly as we reach the back half of the decade.

Figure 22. Will tax credit deal sizes increase or decrease in 2024?



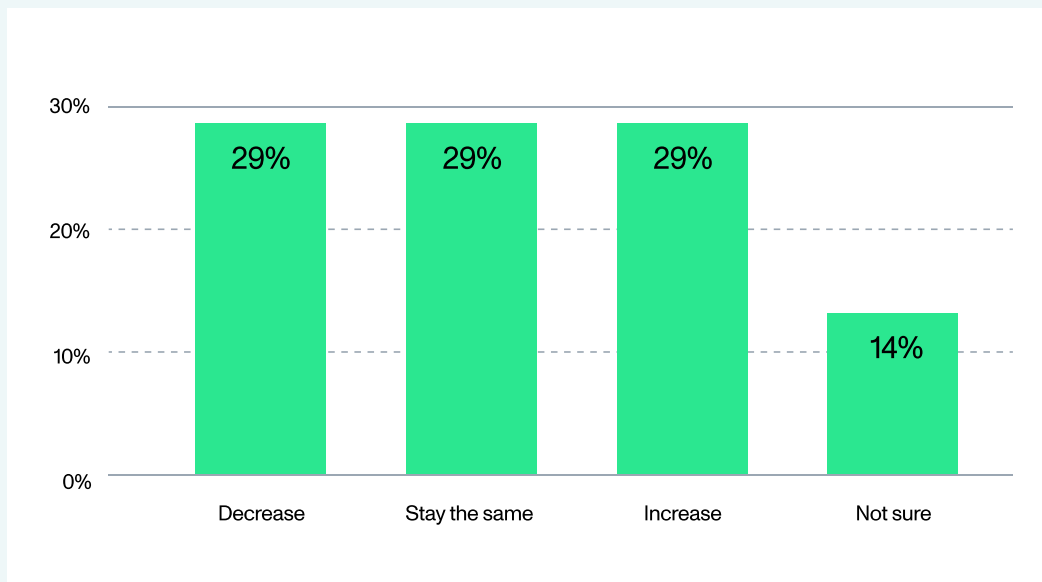
Notably, regulations governing the use of transferability are expected to be finalized this year, which may pave the way for a larger pool of corporate taxpayers to enter the market for tax credits.

Crux's take: There are several reasons deal size can increase. First, there's some indication that buyers and sellers of tax credits in 2023 were testing the market, conducting smaller deals than their pipeline or tax capacity could accommodate. From a macro perspective, it's important to note that 2023 deals generally involved few projects financed after the passage of the IRA. 2024 will see more of these projects, with the first real batch of project financing done with the IRA, and transferability, in mind. With this, we expect to see larger transferability deals and new financing structures to support continued growth in clean energy development. Finally, we expect large portfolios of credits to be sold from tax equity partnerships in 2024 and beyond.

2024 pricing expectations

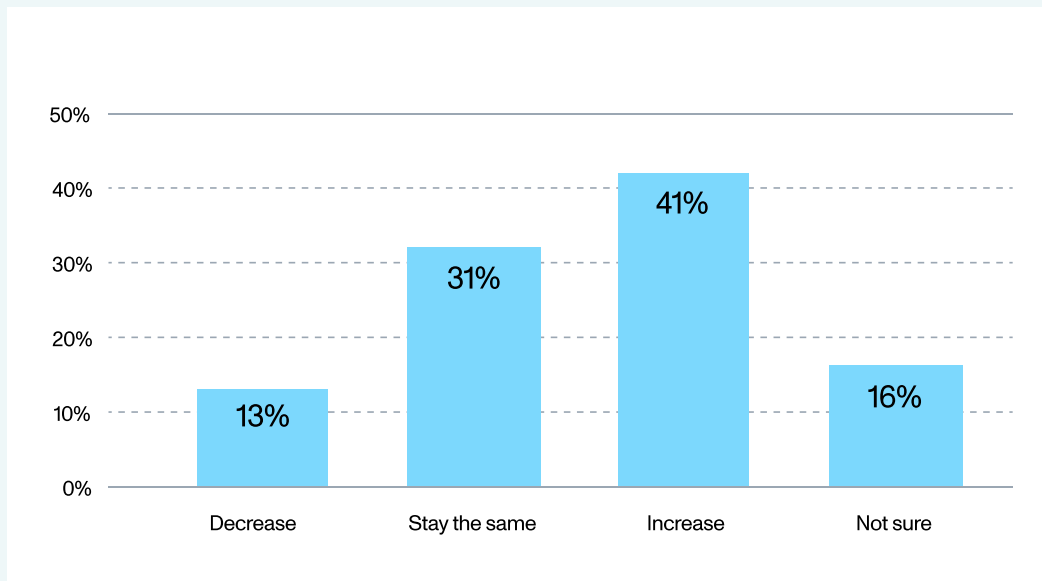
Buyers were divided in their expectations for market pricing in 2024 (Figure 23). They were three times more likely than sellers to expect pricing for clean energy tax credits to decline (29% versus 10%), though equal portions each reported that they expect prices to rise or stay the same. The even split could indicate inconsistency in levels of buyer research and education, and demonstrates the need for better industry transparency and reporting.

Figure 23. Buyer expectations for credit prices in 2024



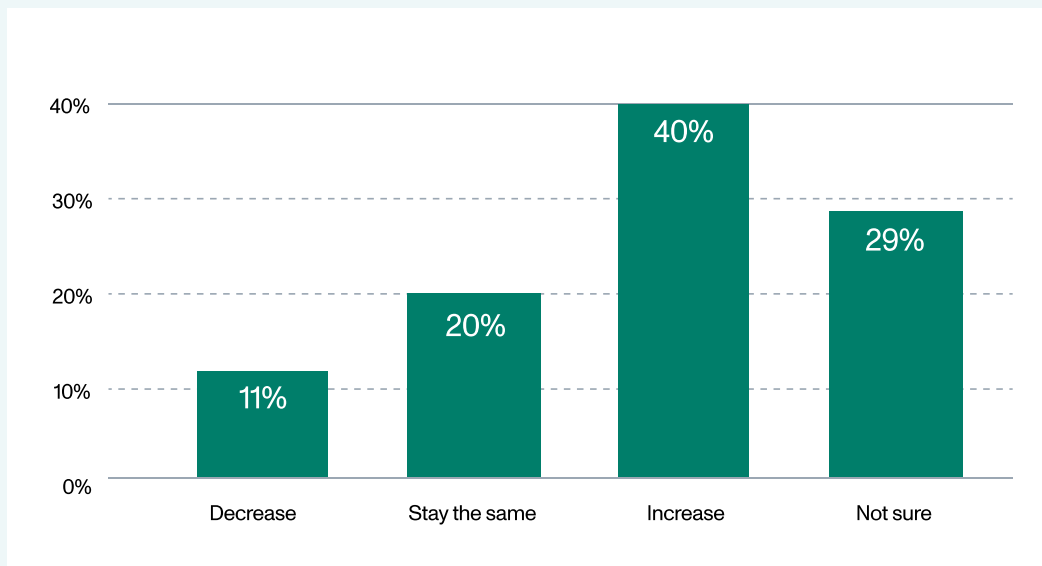
As shown in Figure 24, 69% of **sellers** reported that they expect pricing to either increase or stay the same (39% said increase, 30% said stay the same). This may be partially reflective of sellers' experience in the very strong supply-constrained market at the end of 2023 and a general assumption that as the market develops, pricing will become more competitive as buyers become more comfortable.

Figure 24. Seller expectations for credit prices in 2024



Similarly, while a small minority (11%) of **intermediaries** reported that they expect prices to decrease, 39% expect prices to increase in 2024 (Figure 25).

Figure 25. Intermediary expectations for credit prices in 2024



Misalignment on price is one of the most common challenges faced over the course of a deal. Tax credit sellers typically cover many of the deal costs — including transaction fees, due diligence, and insurance — so it is particularly important that all sides of a transaction are aligned on not only the gross price but also the realized price to the seller.

On the other hand, the market for tax credits is highly fragmented. It is possible for pricing that one tranche of credits (either smaller credits, or newer technologies, or credits from lesser-known developers) could appreciate while pricing for more in-demand credits remains flat — compressing the credit size/type/issuer discount we discuss in the pricing section.

Crux's take: Misaligned expectations are not surprising in a nascent market. Many new buyers are not familiar with clean energy tax credits, and may be drawing from experiences in other transferable credits (like state credits). Sellers appear to anticipate another hot market for credits in 2024, given the higher-than-expected demand for credits in 2023. We broadly expect that the market will reset in 2024 as it will no longer be as strictly time bound and more supply will come to the market — so expectations could get shaken up a bit. In a practical sense, good advisors and early alignment on terms can help buyers and sellers get individual deals across the finish line smoothly.

Summary Findings

1.

The majority of market participants expect prices for tax credits to rise in 2024, but buyers are least likely to think so (and three times more likely than sellers to predict that prices will decrease). This division suggests that the market is somewhat fractured between buyers and sellers.

2.

The large majority of survey respondents believe that deal sizes will increase in 2024. This suggests that market participants share a view that deals in 2023 amounted to parties “testing” the market for tax credits. Projects financed after the passage of the IRA are more likely to have transferability incorporated into financing structures, including through hybrid tax equity partnerships and joint ventures.

3.

Some guidance still needs to be finalized (and several pieces of guidance were released shortly before the holidays). This may contribute to misalignment in expectations and the fragmented market for tax credits from newly eligible technologies, which typically sell at a discount to credits from established technologies like wind and solar.



06

Conclusion

A note from Crux co-founder and CEO Alfred Johnson

In the six months since credit transfers began to take place, an estimated \$7-9 billion of new private sector investment has flowed into clean energy and decarbonization projects across the United States. These investments will finance new clean energy infrastructure, create jobs, support low income and rural communities, and fuel American innovation.

In 2023, we saw hundreds of new market entrants invest across multiple technology types, including categories that did not previously receive tax credits, like advanced manufacturing and bioenergy. This influx of capital is reducing costs to build in America and financing critical improvements to our energy infrastructure.

This market has scaled faster than anyone anticipated, indicating exponential potential for growth and positive impact. The credits also fundamentally change the way projects are financed.

Since the passage of the IRA in August 2022, private companies have announced over \$628 billion in commitments to American industries like clean energy manufacturing, electric vehicles, and clean power.

Rhodium Group recently reported that investments in clean energy and transportation in the US reached a record \$64 billion in Q3 2023, a 42% increase compared to the same period last year.

All states are benefiting from these investments, though an August 2023 Financial Times analysis reveals that over \$180 billion of investment was committed to districts represented by Republican members of Congress, compared to approximately \$10 billion in districts represented by Democrats. Tax credits are catalyzing new and critical battery manufacturing in Georgia, bioenergy in North Carolina, geothermal in Nevada, and solar in Arizona.

Low-income and rural communities are already seeing disproportionate benefits from these new tax credits. In the first 30 days of the application window for the Low-Income Communities Bonus Credit Program, Treasury received more than 46,000 applications for new energy facilities located in low-income communities.

Transferable tax credits are a key element to US leadership in energy policy. Following our lead, Canada proposed a new renewable energy investment tax credit as part of its 2023 federal budget. In an effort to dissuade cleantech companies from leaving Europe and investing in the US, the EU has been promoting its own subsidy efforts. To be clear: more subsidies in more places are absolutely necessary to meet global goals to triple the world's renewable energy production by 2030.

We are just beginning to see what this new market has to offer and the impact of the investments into critical clean energy projects.

But in order to meet its purpose of helping to catalyze \$3 trillion of investment in the US over the next 10 years, the market needs more participants, liquidity, efficiency, and transparency. At Crux, we are dedicated to building that market. By streamlining these transactions, we can generate more projects, faster development, and increased alignment of interests across the economy.

Tax credit sellers, buyers, and intermediaries will each play a crucial role in 2024 and beyond. We hope that this report helps answer questions, provide transparency, and ease uncertainties, ultimately enabling all prospective participants to seize the opportunity at hand.

To stay up to date on the market and receive our future reports, sign up for The Crux of It newsletter. If you'd like to learn more about Crux and engaging in the 2024 market for transferable tax credits, get in touch today.



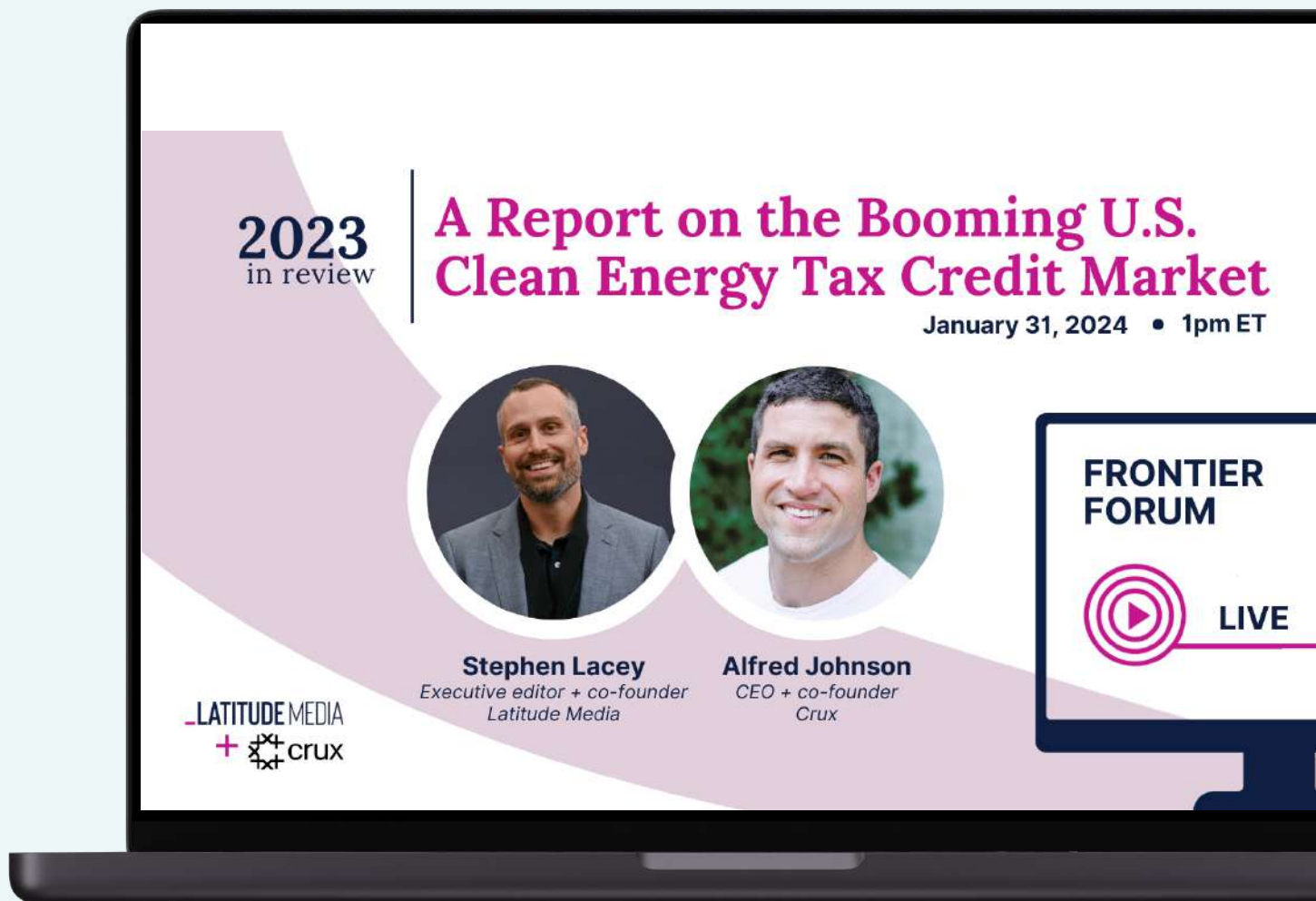
Alfred Johnson

Join us

Unpack the findings of this report LIVE with Crux CEO Alfred Johnson and Latitude Media Executive Editor Stephen Lacey on the upcoming Frontier Forum.

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2023
in review

**A Report on the Booming U.S.
Clean Energy Tax Credit Market**


January 31, 2024 • 1pm ET

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