NautilusSolar®

COMMUNITY SOLAR AND THE INFLATION REDUCTION ACT

Navigating the short-run and long-run implications

SUMMARY OVERVIEW

The Inflation Reduction Act (IRA) of 2022 is the largest ever commitment made by the United States to turbocharge the nation's climate agenda. It sets a new foundation for American innovation and ingenuity to lower consumer costs and drive the global clean energy economy forward. Any major legislation includes execution implications. We take a macro-level perspective on the implications of the IRA on community solar in both the short run and long run. In the short run, the act includes provisions to lower energy costs for Americans, measures to address the cumulative impacts of pollution on disadvantaged communities, access to funding and tax incentives to promote domestic manufacturing, and stipulations that promote workforce development and equitable pay. In the long run, the IRA implications are uncertain. It is likely that challenges in the short run could be greater in the long run. We discuss four IRA provisions and considerations for navigating community solar in both the short run and long run.

HIGHLIGHTS

- ☑ Energy Justice: Bringing Affordable Clean Energy to Low-Income Communities
- ☑ Expanding the Pool of Investors Able to Monetize Investment Tax Credits
- ☑ Readying the U.S. Solar Workforce
- ☑ Navigating Domestic Manufacturing and the Supply Chain

COMMUNITY SOLAR

Community solar is defined as local solar facilities shared by multiple community subscribers who receive credit on their electricity bills for their share of the power produced. Community solar makes solar power more accessible and affordable, creates jobs and stimulates local economies, reduces greenhouse gas emissions, and increases energy independence and resilience. To date, community solar policies and programs are available in 22 states and the District of Columbia.

(Source: Solar Energy Industries Association)

ENERGY JUSTICE: BRINGING AFFORDABLE CLEAN ENERGY TO LOW-INCOME COMMUNITIES

The IRA will provide targeted incentives to drive investment and create opportunity in all communities across the country, particularly the disadvantaged or underserved communities. Not only will the IRA help accelerate the clean energy transition, but its provisions will also work towards prioritizing equitable distribution of social, economic, and health benefits and burdens across all segments of society. This is commonly known as energy justice.

Reducing Energy Burden

The affordability of and access to reliable energy is at the heart of energy justice. Sometimes referred to as an "energy burden," studies have shown that communities of color and low-income families pay a significantly higher share of their income in energy costs. National data from the U.S. Department of Energy show that on average, low-income households pay nearly 9% of their income in energy costs—three times more than non-low-income households. State enacted community solar programs are an example of initiatives to achieve energy justice. Regardless of socio-economic status or income level, community solar offers everyone the opportunity to receive the benefits of solar energy at a cost savings.

Most recent state-enacted community solar programs have a low-income component already built in. However, the IRA will accelerate the expansion and growth of the community solar industry, enabling more projects to be carved out for underserved communities.

Barriers to Energy Justice

To realize the full objective of the IRA and facilitate the adoption of community solar in low-income communities, there are several barriers that will need to be removed in the short run, namely the qualification of low-income customers, the integration and cooperation of the utilities, and program education and building trust in the low-income communities.

WHAT IS ENERGY JUSTICE?

Energy justice refers to the goal of achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on those disproportionately harmed by the energy system. Energy justice aims to make energy accessible, affordable, clean, and democratically managed for all communities.

Source: Initiative for Energy Justice

1. **Qualifying Low-Income Customers**

A barrier to entry is the qualification of low-income customers. While the low-income guidelines are still uncertain, experience has shown that if there are too many hurdles to income qualification, customers will not participate in community solar programs. It will be important to ensure that the process to qualify low-income customers does not exclude them from participating, as it could prevent serving those who need it most. Utilizing easy qualifiers such as U.S. census tracks, self-attestation, and current low-income program participation would help facilitate the process. Furthermore, removing the need for an annual requalification will be important. Only those customers who move should need requalification. While Nautilus does not currently income qualify its customers, all companies will be required to follow the state and/or federal guidelines.

2. **Local Utility Integration**

Another barrier to participate is the integration and cooperation of local utilities. Partnerships with utilities are essential to making the program seamless for customers and community solar operators. As the long-term owner, operator, and manager of our projects, the ability to access customer information and bill in a timely and accurate basis is important to customer service and satisfaction. Better integration and more cooperation from utilities will make the process less cumbersome for customers to receive clean energy benefits.

3. **Building Community Trust**

Finally, education and building trust is instrumental in reaching low-income customers in the short run. Low-income communities often require different communication channels and practices to build trust. They may have had previous negative experiences with third-party energy companies or banking institutions due to a lack of educational information, financial constraints, and language and cultural barriers. To address these challenges, solar developers and community solar providers will need to invest in targeted local outreach and educational efforts and ensure that their programs are inclusive and accessible to all members of the community.

Considerations to Achieving Energy Justice

Over the next five years, Nautilus expects to increase community solar access to more low-income customers. To achieve this, we are striving to:

- ☑ Simplify the process for low-income customers to enroll and qualify for renewable energy.
- ☑ Establish strong foundations and reciprocal relationships with local organizations in the community to build trust.

Community solar will help provide clean energy, lowering energy costs for those most in need - giant steps towards achieving energy justice.

EXPANDING THE POOL OF INVESTORS WITH INVESTMENT TAX CREDITS

ITC Defined

Investment tax credits (ITC) are a type of tax incentive that allows businesses to deduct a portion of the cost for certain types of property or investments from their federal income tax liability. In some cases, businesses, like solar developers, who are unable to use all their ITCs may choose to partner with a tax equity investor to monetize the tax benefits. Traditionally, these financial transactions are complex, requiring firms to have the expertise and the appetite to tackle the intricacies of tax equity deals. Furthermore, according to financial experts, there are a very limited number of tax equity investment firms in the U.S., and the larger ones have approximately 50% of their tax capacity already committed to prior year deals. This further adds to the complexity of tax equity transactions for solar developers.

New ITC Incentives and Bene its

The IRA now provides that a solar developer can directly sell ITCs to a third party who may be able to use them immediately. This will considerably benefit the entire solar industry, including distributed clean energy projects that historically have struggled to attract tax equity investors.

1. **New Pool of Investors**

   The new ITC provision will attract an additional pool of investors that will have the opportunity to enter into much simpler agreements with a developer while enjoying the benefits of the ITCs that year. Increased competition and increased appetite to buy ITCs from developers would in turn open new financing opportunities for solar developers. In the long run, the new ITC provision will further enable community solar projects to be developed, constructed, and operated, while creating more jobs and helping the economy and the environment.

2. **Simplified Due Diligence**

   Additionally, it is likely that the provision to sell ITCs will positively impact the due diligence process. From a financial perspective, the smaller the size of community solar projects results in higher due diligence costs per MW than a larger utility-scale project. The challenge for solar developers is to keep due diligence costs down for the transaction to be viable. To make a transaction economically feasible, the portfolio of projects needs to be large enough to amortize the financing costs. The IRA's new ITC provision opens up a larger field of potential investors who may not have the same concerns or constraints as traditional tax equity investors.

3. **Lowered Costs**

   In the long run, this larger pool of investors should decrease the cost of financing by putting more pressure on the supply/demand balance, increasing the supply of investors and therefore decreasing the cost. Lower costs make room for innovation and ingenuity. There will be a greater scope and ability to be creative in new markets that otherwise were restrained. The IRA provides solar developers with a wider playing field and the opportunity to explore other structures to finance or buy projects and reach new customers such as low-income communities.

4. **Energy Communities Addressed**

   Under the IRA, community solar projects are further benefiting from a 10% tax credit adder for energy communities, which include metropolitan areas with above-average unemployment rates. These tax credit adders will help broaden clean energy benefits to underserved communities.

Perceived Financial Risk of Low-Income Communities

For some lenders and investors, however, low-income customers are perceived to be a higher risk requiring more conservative structures. Solar developers should monitor how banks price the perceived risk of revenue generated from low-to-moderate-income subscribers. Some lenders may see it as a way to make renewable energy more equitable. Others may view it as an opportunity to satisfy ESG goals. Contrary to the perception that low-income subscribers are a higher risk, low-income subscribers are incentivized through higher discounts to stay current on their monthly energy bills. Our customers tell us that the 20-25% low-income discounts are truly valuable, saving them upwards of $20 to $30 dollars a month. More work will need to be done in the long run to demonstrate that low-income households are a more secure stream of cash flow than what the current perception dictates.

Considerations for Deploying New ITC Incentives

In the long-term, the impact of the Inflation Reduction Act on investment tax credits is favorable. Nautilus aims to deploy several strategies to navigate the new ITC incentives, including:

- ☑ Expanding the pool of tax equity investors through new financing structures and opportunities.
- ☑ Bringing the environmental and economic benefits of community solar to new markets, in particular, low-income communities.

These strategies will ultimately lead to more innovation and productivity, ensuring more community solar projects will have the opportunity to be developed, constructed, and operated, while creating more jobs and helping the economy and the environment.

READYING THE U.S. SOLAR WORKFORCE

The IRA is designed to help protect America's workers and boost the local economy by ensuring that a fair wage and benefits are paid. Moreover, tax incentives are provided for using qualified apprentice programs aimed at building a pipeline of skilled workers. Yet, as the energy transition accelerates, solar developers face a critical problem: who will staff surging workforce demand?

Strengthening the Solar Workforce

The IRA requires developers to pay both construction workers and project operators prevailing wages, or the average wage of similarly employed workers in specific occupations as determined by the Labor Department.

1. **Standardizing Prevailing Wage**

   In the short run, there is uncertainty about the process to determine and administer the prevailing wage while ensuring companies meet requirements. Inflation coupled with labor and equipment shortages have made it difficult to adequately determine prevailing wage because of fluctuating costs. Engineering, Procurement, and Construction (EPC) pricing continue to skyrocket causing construction timelines to be extended by several months. These fluctuations may artificially increase prevailing wage comparisons unnecessarily and therefore, falsely burden the wage standards developers are asked to meet. This squeezes developer margins or makes them less competitive in deal pricing.

2. **Training a Qualified Workforcee**

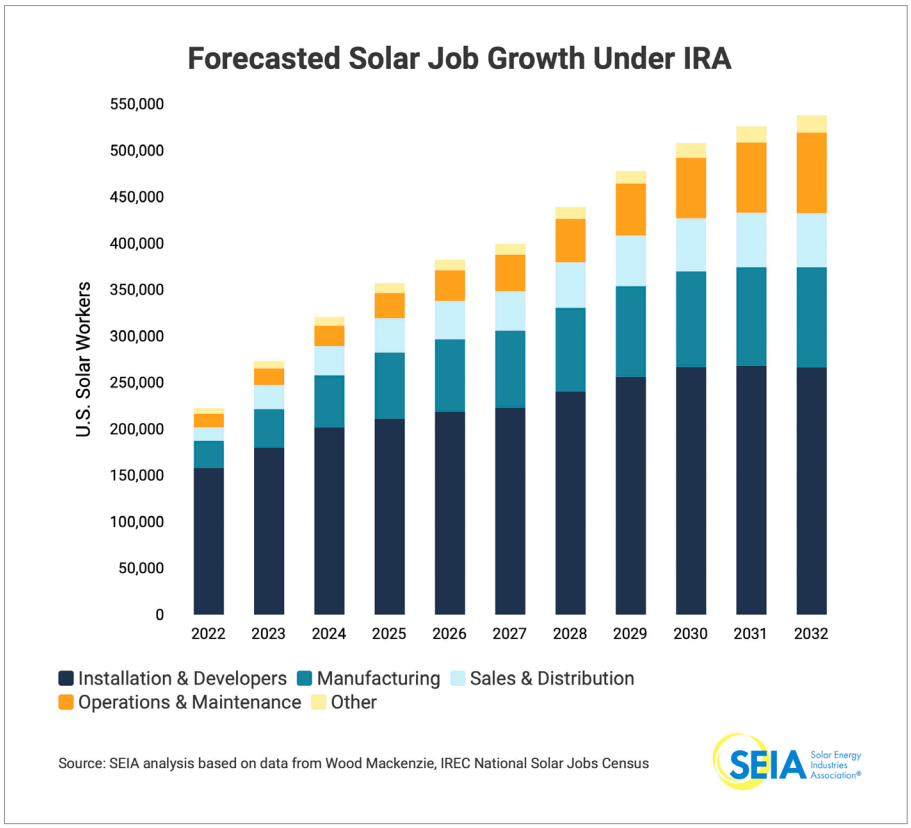
   Under the Act, in order to get the full value of the credit, 12.5% of a project's labor hours must be from "qualified apprentices" participating in an apprenticeship program registered with the U.S. Labor Department or a state equivalent. The apprentice requirement is a way to ensure IRA funding is used for paid on-the-job and classroom learning, thereby bringing about job growth in the clean energy sector. There were close to 600,000 active registered apprentices nationwide across all industries in 2021, according to the Labor Department, with numbers varying significantly from state to state. Unfortunately, there are not enough apprentice programs across the country to meet the demand.

   In the short run, the IRA legislation provides a "good faith" exception for the apprenticeship requirement, if a company's hiring request is rejected by a registered apprenticeship program, or if the apprentice program fails to respond within five days. But questions about the logistics of that exception remain.

Finding and Retaining Skilled Labor

It's simple supply and demand economics; the number of projects that need to be built vastly outnumbers the pool of qualified workers to build them. Solar jobs were up in 47 states and increased 9% nationwide from 2020 to 2021 to a total of 255,037 solar workers, according to the annual National Solar Jobs Census from the Interstate Renewable Energy Council (IREC). The IRA will help create hundreds of thousands more jobs. According to the Solar Energy Industries Association (SEIA), over the next decade, solar jobs will more than double, from over 255,000 today to 538,000 by 2032.

The IRA intends to protect American workers. While solar jobs offer long-term paths for advancement and family-friendly careers, the IREC found that in 2021 89% of solar firms reported difficulty finding qualified applicants. There are simply not enough qualified, skilled workers to meet the demand of the growing solar industry.



1. **Building a Workforce Pipeline**

   As the energy transition accelerates, more attention should be placed on addressing the labor shortage in the solar industry. Several opportunities exist including increasing education and training programs to attract more workers, partnering with local schools, vocational schools, and community colleges to promote careers in the solar industry, and raising awareness to change societal perceptions about highly skilled, trade positions.

2. **Augmenting Labor with Technology**

   For community solar projects, a large portion of the maintenance cost is labor. Technology will likely play an important role to scale community solar and keep projects economically viable. As the stream of projects increases, developing processes and procedures to automate as much as possible will allow technical experts to leverage plant performance.

Considerations to Readying the U.S. Solar Workforce

Overall, the long-run impact of the inflation reduction act on the labor force will be positive. However, in the short run, solar developers will likely continue seeing an increase in EPC costs and pricing as the new prevailing wage provisions of the IRA are rolled out and implemented. Nautilus is navigating through these challenges by:

- ☑ Partnering with new EPC associates to expand the pool of qualified workers in our markets.
- ☑ Championing solar jobs to encourage recruitment of trained workers and eliminate negative societal perceptions of trade careers.
- ☑ Looking to new technologies to augment labor and shorten project construction timelines.

NAVIGATING DOMESTIC MANUFACTURING AND THE SUPPLY CHAIN

The IRA provisions are intended to put the United States on a path to roughly 40% emissions reduction by 2030. But the provisions also reflect economic and geopolitical objectives, including lessening our reliance on China and ensuring that the clean energy transition creates millions of American manufacturing jobs and is powered by American-made clean technologies. Consistent with these goals, the IRA significantly expands U.S. tax credits for renewable energy projects by imposing domestic content incentives.

Domestic Manufacturing Capacity Required

While the tax credits for domestic content are included in the IRA for those who qualify, it is unlikely that many solar developers will be able to take advantage of (or even qualify to receive) the incentives in the short run. The U.S. currently has approximately 11 GW of PV module production capacity, according to consultancy Wood Mackenzie, out of a global capacity approaching 500 GW as of 2021, according to the International Energy Agency. This is due to several factors, including the high cost of manufacturing, competitive pricing from foreign producers, and the historic lack of incentives for domestic manufacturers. There are also significant gaps in the supply chain that will need to be addressed. While the IRA provisions will incentivize increasing domestic manufacturing, it will take years, if not decades, for U.S. manufacturing to build out its domestic supply chain to meet new solar project demands.

Additionally, while solar equipment costs have fallen due to technological advancements, market barriers, and grid integration challenges continue to hinder greater deployment. Further innovative technology and market solutions are still needed to increase efficiency and drive down costs.

Timing Modifications

The greatest risk facing solar developers today is supply chain logistics, particularly the timing and procurement of equipment. Supply chain challenges and increased costs are a direct result of the global pandemic and trade instability in the manufacturing and shipping of electrical components, solar panels, and racking. Additionally, many utilities are requiring solar developers to purchase transformers and switch gear from specific suppliers. This adds to long lead times as manufacturing cannot meet increased demand. Furthermore, domestic manufacturing is years away from being able to meet the current equipment demand. Unfortunately, the global supply chain volatility in the short run is not likely to go away anytime soon.

THE U.S. CURRENTLY HAS APPROXIMATELY 11 GW OF PV MODULE PRODUCTION OUT OF A GLOBAL CAPACITY OF NEARLY 500 GW.

Sources: Wood Mackenzie & International Energy Agency 2021

Creative Procurement

To compensate for the impact on supply chains, solar companies will be required to switch from a just-in-time procurement strategy to one of bulk purchasing or forward buying to create both price and supply certainty. Either option is risky and requires solid financial backing to absorb the risk. This is not a viable option for many solar developers.

Considerations for Navigating Domestic Manufacturing and the Supply Chain

In the long run, supply chain logistics should level out. And solar developers should be able to take advantage of the domestic content tax credit incentives once production increases. In the meantime, financially secure developers like Nautilus will be able to:

- ☑ Adjust logistic timetables by taking on early risk for advanced equipment procurement.
- ☑ Capitalize on new industry technologies.
- ☑ Provide demand certainty for community solar project development, to fuel domestic manufacturing.

BY THE END OF THE DECADE, THE IRA WILL BE INSTRUMENTAL IN ENSURING THE U.S. SOLAR INDUSTRY MEETS ITS GOAL OF

50 GW

OF DOMESTIC SOLAR MANUFACTURING CAPACITY ACROSS ALL KEY INDUSTRY SEGMENTS BY 2030.

Source: Solar Energy Industry Association

REFLECTIONS MOVING FORWARD

The Inflation Reduction Act is the largest U.S. commitment to turbocharge the nation's climate agenda and set a new foundation for American innovation that lowers costs and drives the global clean energy economy forward. The community solar industry is perfectly positioned to help meet the U.S. climate goals. The IRA heightens community solar growth in four significant ways.

Fostering Energy Justice

The IRA promotes energy justice by accelerating the clean energy transition, and prioritizing the equitable distribution of social, economic, and health benefits and burdens across all segments of society. State-enacted community solar programs are perfect solutions, providing access to clean energy and lowering energy bills while mandating the inclusion of low-income components. The IRA will facilitate the expansion and growth of community solar and carve out more projects for underserved communities, but education and reaching these communities will still be a challenge. Additionally, better methods to qualify low-income customers and more collaboration with utilities will need to be addressed to eliminate barriers to participation.

Attracting New and Creative Financing

The IRA provides that a developer can directly sell ITCs to third parties that can use the ITCs immediately. This will open a new pool of financial competitors to entice businesses and institutions to invest in new projects, leading to more innovation and productivity in the future. This should help facilitate the now-complex due diligence process of tax equity transactions. Additionally, the provision will foster financial creativity in entering new community solar markets. Because of the extra incentives, developers will be able to reach more low-income customers and provide clean power at a higher discounted rate than they would otherwise pay to the local utility company.

Building a Trained US Workforce and Adequate Supply Chain

In the short run, the uncertainty of the IRA prevailing wage and domestic content provisions bring risk. Labor shortages, equipment logistics, and supply chain continue to be major factors in the overall costs of transactions and construction of community solar projects. Companies that are willing to take on risk must be financially stable to weather the instability. The long-term impact of the inflation reduction act on the labor force and domestic manufacturing should level out, but it depends on how the government and businesses respond to the changes. It is important to implement policies and measures that support American workers and businesses during the transition period to ensure that the negative short-term impacts are minimized.

Making Solar More Accessible to All

The IRA provisions are intended to put the United States on a path to roughly 40% emissions reduction by 2030. Community solar is one solution as it provides equitable access to the benefits of solar. The long-term impact of community solar is huge:

- ☑ **Reduced Carbon Emissions:** Community solar projects can help to reduce carbon emissions by providing clean, renewable energy to the community.
- ☑ **Energy Independence:** By promoting community solar projects, the IRA would help to increase energy independence by reducing dependence on fossil fuels.
- ☑ **Increased Access to Clean Energy:** Community solar projects can provide access to clean energy to everyone regardless of income. This would help to increase access to clean energy in the communities, in particular those with low-income residents.

- ☑ **Better Energy Security:** Community solar projects can help to improve energy security by providing a local source of power. This can reduce the impact of power outages and other energy-related disruptions.

With almost 500 MW of community solar projects expected to be in operation by the end of 2023 and strong financial backing from Power Sustainable, Nautilus Solar Energy is poised to withstand the turmoil of the short run and thrive in the long run. Solar developers would not be successful without strong partnerships. Our greatest strength lies in our collective power. The IRA provides financial security that enables us to leverage long-term financing which in turn allows us to sustain our efforts to deploy our projected solar pipeline over the next several years.

But for community solar to scale and meet the expectations that the IRA has set forth, more states will need to pass legislation allowing for community solar programs. The benefits of community solar programs are only as good as the policies in place. We are optimistic that the IRA will create a more sustainable financial future for solar energy.

ABOUT NAUTILUS

Nautilus Solar Energy®, LLC is a leading community solar company, providing clean energy to residential and commercial customers in local communities. Nautilus operates and manages solar farms in 10 states and is responsible for financing, development, construction, maintenance, and customer service for the lifetime of the project. Founded in 2006, Nautilus has helped shape the future of solar to provide an equitable and affordable renewable energy choice for all. Nautilus is owned by Power Sustainable, a wholly owned subsidiary of Power Corporation of Canada. Power Sustainable is a multi-platform alternative asset manager with a long-term investment approach focused on sustainable strategies.

Authors

Abigail Broedlin, *Vice President, Asset Management*

Abby manages the Portfolio Operations and Business Operations teams. The Portfolios Operations group operates and maintains the operating portfolio including plant performance and contractual obligations for site leases, PILOT agreements, state incentives, SRECs, tax equity and debt agreements. The Business Operations team is responsible for company-wide IT activities including the implementation and management of the ERP system utilize to manage the project life cycle. Abby began her career in the solar industry in 2008. Abby holds a BS and a Master of Public Administration degree from the University of Rhode Island.

Eric LaMora, *Executive Director, Community Solar*

Eric is responsible for managing community solar subscriber acquisition, management, and customer experience. He brings over 10 years of experience in the development, construction, and acquisition of solar energy projects. Prior to transitioning to the solar industry, Eric spent 17 years in commercial real estate as an asset manager servicing large institutional investors.

Camelia Miu, *Chief Financial Officer*

Camelia is responsible for all financial activities of the company, including accounting, financial reporting, financial planning and analysis, treasury functions, and capital markets transactions. Camelia has over 20 years of experience in Accounting and Reporting, Financial Planning and Analysis, and Project Finance, as well as 15 years in the renewable energy industry. Camelia holds a BA in Accountancy from the University of Illinois, and an MBA from the University of Chicago Booth School of Business.

Sean Reaney, *Vice President, Operations*

Sean is responsible for managing the construction life cycle of all Nautilus' solar projects from early-stage development through the delivery of operating systems. Sean brings over 30 years of experience managing large-scale federal, commercial, and residential construction projects to Nautilus. He has worked in the solar industry since 2008. Sean holds a BS, in Mining & Mineral Engineering from the University of California, Berkeley.

Laura York, *Vice President, Structuring*

Laura is responsible for all acquisition structuring activities for Nautilus. Laura brings over a decade of experience acquiring and financing renewable energy projects. Her previous experience includes providing debt and tax equity solutions for energy projects as well as managing capital markets activities. Laura holds an MS in Global Energy Management from the University of Colorado.

Disclaimer: At press time, the guidelines of the IRA have not been released. The definition of what qualifies as a low-income household, guidelines for selling investment tax credits, and the parameters of domestic content remain uncertain. While the guidelines will aid in the deployment of the IRA, the macro perspective of the short-run and long-run implications of the Act on community solar can still be addressed.