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IRA Activation Guide: **Renewable Energy Procurement, Generation & Storage**

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y Environmental Defense Fund in collaboration with Deloitte Consulting LLP. The views within tal Defense Fund, and do not necessarily reflect the views of report partners or collaborators. The IRA aims to increase supply of renewable energy in the US and is projected to lower clean energy costs in the long-term

KEY IRA IMPACTS

1

Increased Renewables Supply | IRA tax credits are projected to significantly increase clean energy production in the US, resulting in roughly 40% of the country's electricity generation by 2030.

2

Decreased Renewables Cost | Levelized Cost of Electricity (LCOE) to project sponsors is expected to decrease by 40-60%, which will likely result in cost reductions for commercial electricity users.



Estimated LCOE of Wind and Solar Pre- and Post IRA (\$/MWh)



All companies can benefit from IRA provisions that support renewable energy procurement, generation, and storage, particularly those with a high portion of Scope 2 emissions



Company-Average Scope 1 & 2 Emissions, by Sector (in %)

§45 and §48 are the key provisions to know for renewable energy, offering expanded production and investment tax credits to lower the costs and risks of renewables for companies



PROVISION

KEY TAKEAWAYS

With the support of the IRA, renewable energy procurement and generation can help organizations meet their business and climate goals

Renewable energy can help companies:

Reduce Energy Procurement Costs

While renewable energy costs may continue to rise temporarily in 2023 due to ongoing supply chain challenges, wind and solar will likely remain the cheapest energy sources in most areas of the US, as fuel costs for conventional generation have been rising faster than renewable costs.

Increase Long-Term Certainty in Financial Planning

Power Purchase Agreements (PPAs) and Virtual Power Purchasing Agreements (VPPAs) allow companies to agree on a consistent long-term price of energy per MWh, which helps companies hedge against price volatility and improve certainty of longterm forecasting. For VPPAs, there is no physical delivery of energy, only the transfer of RECs associated with the energy generation.

Reduce Scope 2 Emissions

Renewable energy procurement and generation are among the most resource and time efficient strategies for companies to reduce their emissions. Creating and activating a renewables strategy should be an essential part of most organizations' climate goals and abatement strategies.

Improve Operational Resiliency

On-site renewable energy and storage help companies improve the reliability and resiliency of their operations by mitigating the impacts of supply chain disruptions and power outages. Eligibility of energy storage assets for the investment tax credit is a new addition under the IRA (48).

Create New Revenue Streams

Companies that choose to generate their own renewable energy and utilize on-site storage can generate tax credits on the qualifying property they own if they are either (1) utilizing the electricity themselves or (2) selling electricity back to the grid (48 & 45). The IRA now allows these credits to be transferred by qualifying entities to third parties in exchange for cash.

Support Climate Equity

Switching to clean sources of energy can help reduce air pollution and improve health outcomes, particularly for marginalized and disadvantaged communities. The IRA provides additional financial benefits for renewable energy deployed in such communities. **Climate Case:** On-site renewable energy projects and VPPAs with bundled RECs offset conventional generation capacity in the grid and reduce greenhouse gas emissions



Estimated Annual GHG Displacement of a 3MW On-Site Solar Project by US State (tons CO₂)



Notes

- Lower (more negative) values indicate higher marginal impact on abatement based on location of grid and associated emissions intensity. Based on 2021 emissions data, assuming a 3 MW utility scale PV system.
- Data is based on EPA AVERT data available as of February 2023; actual emissionality data will vary as grid composition changes over time.

Organizations can take advantage of the IRA's significant investment in renewable energy across the US by setting a renewables strategy and selecting optimal renewable energy options

Establish an Overall Renewables Strategy

To successfully procure renewable energy, an organization should first have a RE strategy that addresses key questions such as:

What is the capacity to implement on-site generation to help meet its goals? Are you willing to invest in a project with a low price but a risky profile, or would you prefer a higher price with less risk?

Are you most interested in hedging your future energy costs, or receiving RECs at the highest value possible? How do the options fit in with the broader renewable energy strategy?

KEY CONSIDERATIONS



Corporate Strategy & Sustainability Goals



Access to Infrastructure

Current & Future Energy Demand

\$ Ac

Access to Capital



Risk Appetite and ROI

Select the Optimal Renewable Energy Procurement Options

1

Physical Power Purchases

Long-term contracts between RE generator and buyer that provide cost stability and predictability, with options for either on-site or off-site PPAs

2

On-site Generation

Adding on-site renewable energy to meet decarbonization goals and support renewables development (qualifies for direct IRA incentives)

3

Regulated Market Options

Green Tariffs or unbundled RECs that offer flexible options to purchase renewable energy and offset emissions

Virtual Power Purchase Agreements (VPPAs)

4

Long-term contract where RE generator and buyer agree on electricity settlement price, and buyer receives RECs generated by the project

Business Case for On-Site Solar: With a higher investment tax credit,

on-site solar projects can generate higher IRRs

IRR for Sample On-Site Solar Project in Texas

14% 12% 10% 9% 6% 6% 4% 2% 0% Pre-IRA Post-IRA (EC) Post-IRA (no EC)

	Pre-IRA	Post-IRA	
In Energy Community (EC)?	N/A	Yes	No
Investment Tax Credit (48/48E)	22%	40%	30%
Payback Period	7-8 years	6-7 years	7-8 years

ASSUMPTIONS

- System size of 3,000 kW DC Degradation of 0.5% per year
- Degradation of 0.5% per year
- Useful life of 17 years (model assumes a 17-year useful life, however, typical life of a solar system ranges from 30 to 40 years. Therefore, the NPV benefit under the own scenario would be higher if looking over the longer term.)
- Net capacity factor of 22.5%
- Cost to build of \$2.10/watt
- All land is owned with no lease rate included
- Electricity rate of \$0.095 per kWh with no price escalation
- Operating expenses \$8.75 per kW with escalation of 2%
- Construction beginning in 2023 and commercial operation date in 2023
- Bonus depreciation of 80%
- Assumes project meets prevailing wage and apprenticeship requirements (impacts investment tax credit value)
- Financial result does not capture any avoided cost of not purchasing renewable energy credits and emission reductions nor does it capture the intrinsic value of the green marketing both internally and externally.
- Financial model contains simplified assumptions and market data available at the time when the analysis was performed in January 2023, which may affect its ability to reflect actual results; and where the model or elements of it relate to the future (such as projection/forecast of pricing, expected cost of technology, in service date and potential tax incentives), actual results are likely to be different from those produced by the model due to rapid changes in the market, and those differences may be material.

DEFINITIONS

- **Prevailing wage** refers to a minimum combination of basic hourly wage rate and any fringe benefits paid to laborers and mechanics
- Apprenticeship requirements include a specified percentage (e.g., 10-15%) of total labor hours reserved for qualified apprentices
- **Energy communities** are defined as brownfield sites, urban or non-urban areas with a certain unemployment rate, or former fossil fuel communities

§45: The extended and increased PTC increases renewable electricity projects' rate of return, particularly for solar and wind

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CREDIT OVERVIEW

- **Provision Description:** Provides a tax credit for production of electricity from renewable sources
- **Period of Availability:** Projects beginning construction before 1/1/25
- Incentive Type: Production tax credit
- **New or Modified Provision:** Modified and extended. Extended for projects beginning construction before 1/1/25. Modified to tie value of credit to meeting prevailing wage and apprenticeship requirements.



Transferable

Direct Pay (for tax-exempt)

Not Stackable N with 48 ITC for same project

No Limit to # General Business of Credits Credit Terms Apply

Credit Amount:

Rate	Multiplier	Construction Start Date 2023-24 (cents/kWh)	
Base Rate (labor requirements not met)	Base Credit	0.5 cents	
	Domestic Content Bonus	0.1 cents	
	Energy Community Bonus	0.1 cents	
Full Rate (labor requirements met)	Base Credit	2.6 cents	
	Domestic Content Bonus	0.3 cents	
	Energy Community Bonus	0.3 cents	

ELIGIBILITY REQUIREMENTS

Organization Types and Usage:



Available for construction start dates before January 1, 2025

Pueinesses that own or develop renewable operation

- Businesses that own or develop renewable energy projects
- Tax-exempt entities that fall under subtitle F of the IRC, Indian Tribal governments, rural electricity co-ops among others that own or develop renewable energy projects

Project Types:

• Electricity generation from wind, solar, biomass, geothermal, small irrigation, landfill and trash, hydropower, and marine and hydrokinetic sources

Construction Start Date:

• Construction start date dictates eligibility for PTC and rate; however, PTC is claimed in the tax year that the facility is placed in service (see <u>IRS Guidance</u> on construction start date)



HOW TO CLAIM THE CREDIT

- Fill out and file IRS Form 8835 or IRS Form 3800 to claim the PTC
- Review the initial IRS guidance on prevailing wage and apprenticeship requirements
- Look up <u>additional information</u> regarding the PTC in the Database of State Incentives for Renewables & Efficiency (DSIRE)

Sources: Deloitte Analysis, H.R.5376 - Inflation Reduction Act of 2022, WH IRA Guidebook, DoE Solar Energy Technologies Office, IRC.

§45Y: The clean electricity PTC comes online in 2025 and features a high threshold for phase-out, likely extending its availability beyond 2032

CREDIT OVERVIEW

- **Provision Description:** Provides a technology-neutral tax credit for production of clean electricity. Replaces the PTC for electricity generated from renewable sources which is available until 12/31/24.
- **Period of Availability:** Facilities placed in service after 12/31/24. Phaseout starts the later of a) 2032 or b) when U.S. GHG emissions from electricity are 25% of 2022 emissions or lower.
- Incentive Type: Production tax credit
- New or Modified Provision: New



Credit Amount (only full rate shown below):

	Multiplier	Construction Start Date			
Rate		2025-33 (cents/kW h)	2 Years after applicable year	3 Years after applicable year	4 years after applicable year
Full Rate (labor requirem ents met)	Base Credit	2.6 cents	2.0 cents	1.3 cents	0.0 cents
	Domestic Content Bonus	0.3 cents	0.2 cents	0.1 cents	0.0 cents
	Energy Community Bonus	0.3 cents	0.2 cents	0.1 cents	0.0 cents

ELIGIBILITY REQUIREMENTS

Organization Types and Usage:

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Available for facilities placed in service between January 1, 2025 and likely 2032 and beyond

- Businesses that own or develop renewable energy projects
- Tax-exempt entities that fall under subtitle F of the IRC, Indian Tribal governments, rural electricity co-ops among others that own or develop renewable energy projects

Project Types:

• Applies to generation facilities that have an anticipated GHG emissions rate of zero

Construction Start Date & Phase-Out:

- Construction start date dictates eligibility for PTC and rate; however, PTC is claimed in the tax year that the facility is placed in service (see <u>IRS Guidance</u> on construction start date)
- The credit will be phased out as the U.S. meets its GHG emissions reduction targets. (Facilities can claim 100% of credit in the first year after reaching the target, 75% in Year 2, 50% in Year 3, and 0% in Year 4)

HOW TO CLAIM THE CREDIT

- Fill out and file IRS Form 8835 or IRS Form 3800 to claim the PTC
- Review the initial IRS guidance on <u>prevailing wage and apprenticeship requirements</u> to assess opportunities for credit adders
- Look up <u>additional information</u> regarding the PTC in the Database of State Incentives for Renewables & Efficiency (DSIRE)

Notes: The term "applicable year" is defined as the later of a) 2032 or b) the year the Treasury determines that the electric power sector emits 75% less carbon than 2022 levels. Sources: Deloitte Analysis, H.R.5376 - Inflation Reduction Act of 2022, WH IRA Guidebook, DoE Solar Energy Technologies Office, IRC.

§48: The extended and increased ITC increases renewable energy generation projects' rate of return and creates new opportunities for generation coupled with battery storage

CREDIT OVERVIEW

- **Provision Description:** Provides a tax credit for investment in renewable energy projects
- Period of Availability: Projects beginning construction before 1/1/25
- Incentive Type: Investment tax credit
- New or Modified Provision: Modified and extended to include standalone energy storage with capacity of at least 5 kWh, biogas, microgrid controllers (20MW or less), and interconnection property for projects with 5MW or less



Credit Amount (in % of investment cost):



Prevailing Wage & Apprenticeship Bonus qualifies projects for 5x bonus

Domestic content bonus

provides additional 10 ppt Energy community bonus

and **low-income bonus** provide an additional 10 ppt and 20 ppt credit, respectively

ELIGIBILITY REQUIREMENTS

Organization Types and Usage:

- Businesses that own or develop renewable energy projects
- Tax-exempt entities that fall under subtitle F of the IRC, Indian Tribal governments, rural electricity co-ops among others that own or develop renewable energy projects

Project Types:

• Fuel cell, solar, geothermal, small wind, standalone energy storage, biogas, microgrid controllers, and combined heat and power properties. It includes solar powered heating and cooling as well as equipment that uses solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight or electrochromic glass



HOW TO CLAIM THE CREDIT

- Fill out and file IRS Form 3468 or IRS Form 3800 to claim the ITC
- Review the initial IRS guidance on <u>prevailing wage and apprenticeship requirements</u> and the <u>Environmental Justice Solar and Wind Capacity Limitation</u> to assess opportunities for credit adders
- Review <u>additional information</u> regarding the ITC which can be found online using the Database of State Incentives for Renewables & Efficiency (DSIRE)

Sources: Deloitte Analysis, P.L. 117-119, WH IRA Guidebook, IRC.

Available for construction start

dates between January 1, 2023,

and December 31, 2024

§48E: The clean electricity ITC becomes available in 2025 and features a high threshold for phase-out, likely extending its availability beyond 2032

CREDIT OVERVIEW

- **Provision Description:** Provides a technology-neutral tax credit for investment in facilities that generate clean electricity. Replaces the ITC for facilities generating electricity from renewable sources
- **Period of Availability:** Facilities placed in service after 12/31/24. Phaseout starts the later of a) 2032 or b) when U.S. GHG emissions from electricity are 25% of 2022 emissions or lower
- Incentive Type: Investment tax credit
- New or Modified Provision: New



Credit Amount (in % of investment cost):



Prevailing Wage & Apprenticeship Bonus qualifies projects for 5x bonus

multiplier times the base **Domestic content bonus**

provides additional 10 ppt Energy community bonus provide an additional 10 ppt credit

ELIGIBILITY REQUIREMENTS

Organization Types and Usage:

- Businesses that own or develop renewable energy projects
- Tax-exempt entities that fall under subtitle F of the IRC, Indian Tribal governments, rural electricity co-ops among others that own or develop renewable energy projects

Project Types:

• Facilities that generate electricity with a GHG emissions rate that is no greater than zero and qualified energy storage technologies

Construction Start Date & Phase-Out:

- Construction start date dictates eligibility for ITC. However, ITC is claimed in the tax year that the facility is placed in service (IRS Guidance on construction start date)
- The credit will be phased out as the U.S. meets its GHG emissions reduction targets. (Facilities can claim 100% of credit in the first year after reaching the target, 75% in Year 2, 50% in Year 3, and 0% in Year 4)

HOW TO CLAIM THE CREDIT

- Fill out and file IRS Form 3468 or IRS Form 3800 to claim the ITC
- Review the initial IRS guidance on <u>prevailing wage and apprenticeship requirements</u> to assess
 opportunities for credit adders
- Review<u>additional information</u> regarding the ITC which can be found online using the Database of State Incentives for Renewables & Efficiency (DSIRE)

Available for facilities placed in service between January 1, 2025, and likely 2032 and beyond

Business Case for VPPA: Despite short term supply chain challenges, the clean electricity credits in the IRA are expected to increase the financial attractiveness of VPPAs

NPV for Sample VPPA from a Solar Project in Texas (\$M)



VPPA Pricing Trends

- Long-Term Supply Boost: The IRA will provide significant support for long-term renewable buildout
- Short-Term Supply Chain Snags: In the short-term, renewables capacity and pricing are hampered by lengthy interconnection queue backlogs, supply chain obstacles, permitting challenges, and ongoing inflationary pressures driving rising costs across inputs
- **2024+ Impact:** SEIA expects the real impact of the IRA on renewables to come to fruition by 2024, with a forecasted 21% average annual capacity growth across all solar segments from 2023-2027
- **High Competition:** Competition for PPA prices will continue to put timing pressure on buyers to execute contracts in the near term

- Procurement amount per year: 100,000 MWh
- Project location: ERCOT (Texas)
- Commercial Operation Date ("COD"): Q1 2026
- Contract term: 15 years
- Fixed PPA price: \$40.0/MWh
- Market curve: Ventyx Fall 2022 ERCOT Curve

- Discount rate: 6%
- Projected REC cost: \$5/MWh
- Projected Settlement Value Range: -\$1.51/MWh to \$10.16/MWh

ASSUMPTIONS

- REC Avoided Cost: Calculated as the present value of the savings of not purchasing RECs on the open market throughout the contract term
- The above analysis is illustrative based upon market conditions as of January 2023 and the key assumptions provided. The financial results of an actual RFP can differ based upon the requirements of the RFP and the market conditions at that time.

Notes: REC stands for Renewable Energy Credit, which is a market-based instrument that represents the property rights to the environmental, social, and non-power attributes of 1 MWh of renewable electricity generation. SEIA stands for Solar Energy Industries Association. **Sources:** Deloitte Analysis, <u>EPA</u>

VPPA Spotlight: Most companies select Virtual Power Purchasing Agreements as their primary RE option, which exchange fixed-price cashflow for variable-priced cashflow and RECs



VPPA Spotlight: Companies interested in VPPAs should plan for roughly one year to align relevant stakeholders, define strategy, issue an RFP, and finalize a contract

KEY STEPS TO IMPLEMENT A VPPA



Assemble deal team

by bringing together a cross-functional team consisting of finance, accounting, treasury, legal, and sustainability leads.



3

Define VPPA procurement strategy that aligns with your ESG goals, infrastructure access, energy demand profile, access to capital, risk appetite, and hurdle rates.

Issue RFP self-directed or through 3rd parties to solicit outside bids on project based on desired attributes, including price and scale.



Analyze projects & conduct interviews to identify projects that meet predetermined criteria, and

interview short-list of candidates to address open questions.

5

Negotiate & finalize contract

by performing term sheet reviews and engaging internal and outside counsel to select the optimal provider and negotiate details.

Initiate & monitor performance 6

by signing the deal, announcing it publicly if desired, and using digital tools to monitor and report on project performance and financials.

Contract Timeline



Note: Upon VPPA execution, the project will likely take a year or more to generate electricity and the associated RECs.

Key Success Factors



Proactive Planning

VPPAs take time and deal team education. The process will go more smoothly if deal team members understand their roles and responsibilities and agree on strategic goals.



Strategy Alignment

A RE procurement pathway should be considered a solution in the corporation's renewable energy strategy. Ensure alignment with broader sustainability priorities.



Cross-Functional Buy-in

Engage the accounting and tax departments early on and throughout the process to ensure RE procurement options will be treated correctly for tax purposes.

Corporate demand for renewable energy is growing rapidly and can be met through various creative models and partnerships



Every function has a role to play to take advantage of the IRA's renewable energy opportunities



Strategy

- Refresh overall renewables strategy based on projected impacts of IRA incentives
- Align renewables and IRA strategy with overall corporate strategy



Tax

- Assess eligibility for credit adders based on census tract definitions of low-income and rural communities and calculate projected value
- Optimize tax credit choice (\$45 vs. \$48) based on projected project costs and capacity factor
- Prepare to file for relevant incentives (e.g., IRS Form 3468)



Sustainability

- Refresh overall renewables strategy based on projected impacts of IRA incentives
- Calculate projected abatement potential from renewables options and compare against goals, strategy, and alternative abatement projects



Finance

- Conduct ROI analysis of VPPA vs. PPA vs. on-site renewables options based on IRA incentives and projected market impacts (e.g., PTC vs. ITC financial modeling analysis)
- Optimize ownership structure for renewables projects in line with strategic goals and tax planning considerations post-IRA



Operations & Procurement

- Work with Tax to identify suitable and eligible geographic locations for on-site generation
- Identify suitable VPPA/PPA partner
- Collect and track data on prevailing wage and apprenticeship requirements where the company is developing the project



Government Affairs

- Identify additional federal, state and local incentive structures
- Track additional IRS Guidance on the energy generation incentives (while the <u>comment period</u> for the energy generation credits closed on November 4, 2022, the IRS continues to release additional guidance)

Several resources exist to help companies navigate the details of the IRA and develop the strategy

General IRA Resources



WH IRA Guidebook

Includes overview, description, and funding details for each IRA funded incentive



VERT Web Editio

BGA IRA User Guide

Provides overview of IRA incentives by sector and explains funding mechanisms



IRS Credits and Deductions under the IRA

Compiles resources, forms and descriptions of IRA tax credits and deductions



EDF Pathways to net zero: A guide for business

Outlines roadmaps for business leaders to accelerate their sustainability journey

RE Procurement Resources

EPA AVERT Avoided Emissions and Generation Tool



Computes avoided emissions from solar and wind projects by MW size and U.S. state



Accounting and Reporting for VPPAs

Provides information on the financial accounting for VPPAs

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Victoria Mills

Managing Director vmills@edf.org Other useful resources:

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- Deloitte 2023 renewable energy industry outlook
- IEA World Energy Outlook 2022

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