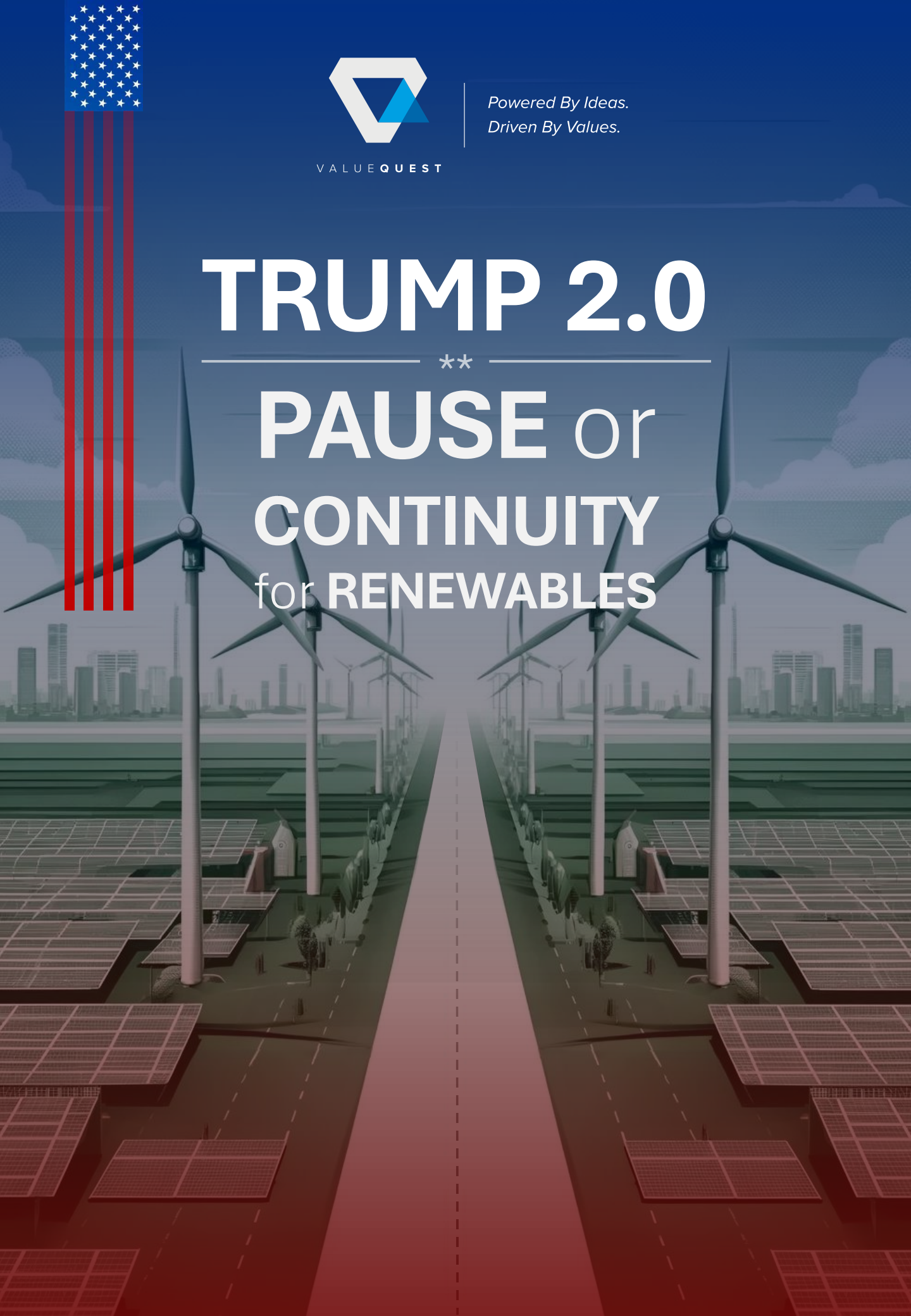
VALUEQUEST
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TRUMP 2.0
**
PAUSE or
CONTINUITY
for RENEWABLES

Donald Trump's victory in the US presidential election has created a buzz around the spending continuity in the renewables space. He has argued that the US needs to increase energy production to be competitive in multiple areas, including the developing power-hungry artificial intelligence systems. During the election campaign, Trump said that he will encourage new natural gas pipelines and increase US production of fossil fuels.

Renewable energy is one of the fastest-growing segments within the US power grid, driven by federal tax credits, state renewable-energy mandates, and technology advancements that have lowered their costs. While it is pre-mature to predict how Trump administration will act on maintaining the policy balance between fossil fuels and renewables, we have curated some key pointers to reflect upon this subject, although they are not conclusive yet.

Key points to reflect upon

1. Renewables driven by technological progress at an irreversible tipping point

> *"Every fact of science was once damned. Every invention was considered impossible. Every discovery was a nervous shock to some orthodoxy. Every artistic innovation was denounced as fraud and folly. We would own no more, know no more, and be no more than the first apelike hominids if it were not for the rebellious, the recalcitrant, and the intransigent."*
> **- The Law of Accelerating Returns**

- **12x capacity in 10 yrs** including Covid years: Solar energy capacity has reached 178 GW in USA by CY'23 *(vs a meager 15GW CY13)*.
- **Annual installation** has reached **~33GW in CY2023** *(vs 13GW in 2019; 6GW in 2014; 1 GW in 2010)*.
- **More than 50%** of CY23 grid capacity was from **Solar**, driven by the lowest and continuously improving LCOE (Levelized Cost of Energy), need for decarbonization, affordable energy and energy independence. This is an irreversible trend, that policy makers can only support to accelerate.
- A massive pipeline of at least 1,085 GW of solar capacity dominated the transmission queues at the end of 2023 of which nearly ~50% has been paired with energy storage, giving the industry significant visibility ahead.

(Elon Musk on Solar's potential)
https://economictimes.indiatimes.com/industry/renewables/elon-musk-on-why-all-energy-generation-will-be-solar/articleshow/113723423.cms?from=mdr

"An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense "intuitive linear" view. So, we won't experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress (at today's rate). The "returns," such as chip speed and cost-effectiveness, also increase exponentially. There's even exponential growth in the rate of exponential growth"

- Ray Kurzweil

2. Inflation Reduction Act (IRA)

- **IRA 2022, a landmark legislation**: This act was passed by the 117th US congress & signed into law in August 2022 by President Joe Biden**.** It offers funding, programs, and incentives to promote renewable energy growth, making it the most significant climate legislation in US history.
- While the IRA is often thought to be an act for/supporting green energy, its aim is broader & more sweeping. It aims to reduce the federal government budget deficit, lower prescription drug prices and invest in domestic energy production, while promoting clean energy.
- The law according to the Congressional Budget Office (CBO) & Joint Committee Taxation (JCT) may raise $788bn from tax reforms while spending $891bn of which $783bn is targeted towards energy, climate change & three years of affordable care subsidies. It also involved re-invigoration of the IRS with 87,000+ new employees & the collection $1bn of back taxes from HNIs. (as of July 2024)
- Repealing or making significant changes to the IRA would be challenging for any administration. Since the IRA is an enacted law, not a federal agency regulation or executive order, any substantial changes will require congressional approval.
- USA has a history of such regulations to drive renewables energy growth, so IRA is mere an extension, e.g. Investment Tax Credit (ITC) and Production Tax Credit (PTC). The ITC and PTC were first introduced in the Energy Policy Act of 2005, with the goal of encouraging the development and deployment of renewable energy technologies. Over the years, the ITC and PTC have undergone several changes and extensions. The American Recovery and Reinvestment Act of 2009 allowed taxpayers to receive a 30% tax credit for qualified renewable energy property, and the Treasury Department granted $2.3 billion in stimulus grants to renewable energy projects. The Inflation

Reduction Act of 2022 further extended and modified the ITC and PTC, increasing the tax credit rates and expanding eligibility to include energy storage technologies.

The original cost estimate for the IRA was something like $366 billion over 10 years. The latest estimate is around $1.6 trillion. Only about 17% of the $1.2 trillion that were obligated in those bills has been spent to date.

3. Trump 2.0: Alignment of Interest

- **The red states are aligned to renewables**: The southern half of USA is where most of renewables' installation and manufacturing boom is happening. This is driven by the southern half being higher on solar radiation, measured in kWh/m^2/day. Incidentally, most of these are republican states. **~60% of Solar capacity and area** is within the so called ' red states.'

Democrat vs Republican States (% Area & % Solar Capacity)

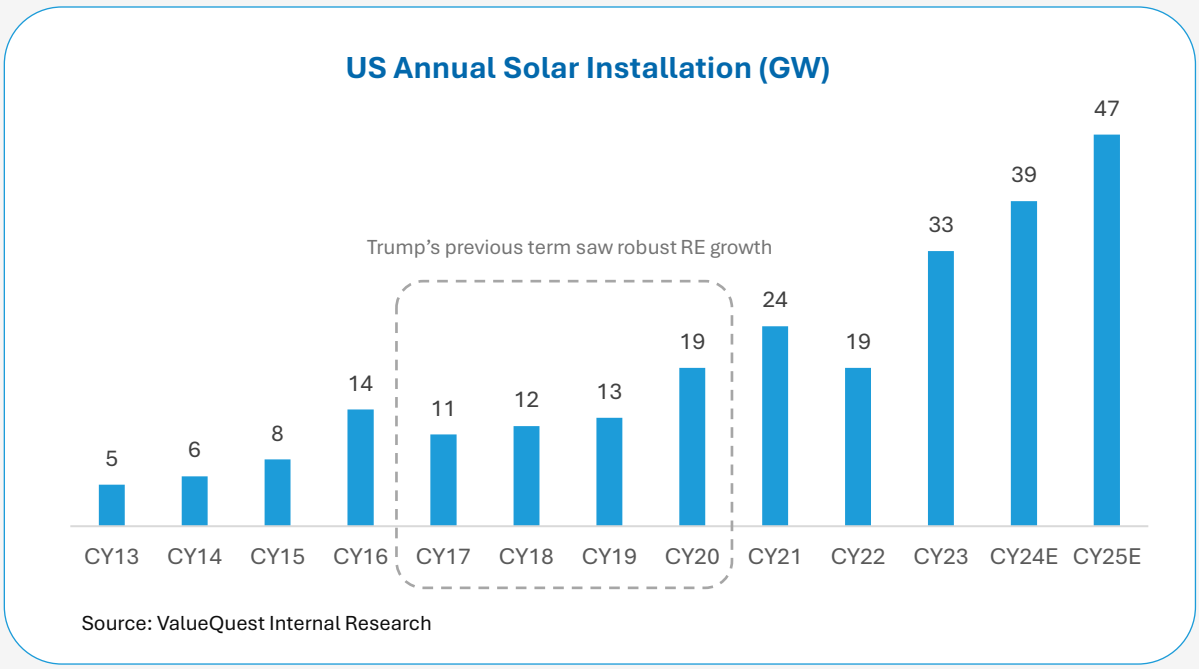
Party wise	% Area	% Solar PV
Democrat	42%	41%
Republican	**58%**	**59%**

Source: Lawrence Berkeley National Laboratory Energy Markets and Policy Department, data as of November 2024

- **Job creation in Red states, driven by renewables**: These states have created significant jobs in both manufacturing and utilities industries, driven by the renewables trend. (The U.S. solar industry accounted for 279,447 jobs as of December 2023, marking a 5.9% increase from 2022 with 15,564 jobs added. Solar jobs also increased in 47 states, with some of the largest gains in Florida, Texas, Arizona, and Nevada. *(All four states being republican)* (*Source: IREC USA*))
https://irecusa.org/census-solar-job-trends/?utm_campaign=heatmap_am&utm_medium=email&_hsenc=p2ANqtz--s36PLY_KnD_IvxTFhpumICRAajkIdSA1Nfo5aNwiQ72vDawDV6o1wIui7_gqMhaM5zeJR0EYre9LRqtlCvWM7Yqqu6w&_hsmi=325003550&utm_content=325003550&utm_source=hs_email

- Renewable energy adoption trends were **robust** even during Trump 1.0.

- The Trump administration is even more anti-China or in favour of **de-risking high dependence** *(which could possibly be an opportunity for countries that are well prepared and have a good trade relationship with US).*



4. Risk Mitigation: From Challenges To Opportunities Under The New Regime

- Since the new administration is anti-China *(also impacts Chinese backed entities in South-east Asia)* and about reducing dependence on a single trade partner, it can lead to significant opportunities for India.
- India is already a significant trade partner for the US across several industries like software, pharmaceuticals, consumer products and services and there is a noticeable alignment between Modi and Trump.
- India's large scale manufacturing base, STEM talent, competitive cost of production *(vs South-east Asia & Mexico),* with reliability of supply can make it a preferred partner of choice *(India has not being named in the ongoing AD/CVD investigation in South-east Asia).*
- India has the potential to replace South-east Asian countries as the leading solar PV exporter to the US, according to a new report from IEEFA and JMK Research & Analytics. (Source: PV Tech)
  https://www.pv-tech.org/india-has-potential-to-lead-solar-pv-exports-us-says-ieefa-jmk-research/
- Several Indian companies are already building meaningful capacities in the US, to mitigate risk.
- The possibilities for non-Chinese companies to avail benefits of tax credits improve going forth. This benefits companies building a manufacturing base in the US.

Key Takeaways

- The IRA act is deep and hard to repeal or change.
- While IRA helps accelerate renewables investments **there are multiple drivers** to the clean energy trend: technological progress, economies of scale, IRRs even without incentives, state and local policies, commitments by enterprises towards decarbonization, grid parity and renewables becoming competitive vs fossil fuels, public awareness towards climate change and compassion towards a better tomorrow.
- US will need new trade partners, competitive manufacturing bases, a whole new supply chain *(excluding China/Chinese-backed cos)* to progress its new energy ambitions. India is well poised in absolute scale and versus its competitors.

However, it is too early to judge or conclude on the specifics of the possible impact or probable changes in law or industry actions. We would like to wait & see how it unfolds over the course of next few months.

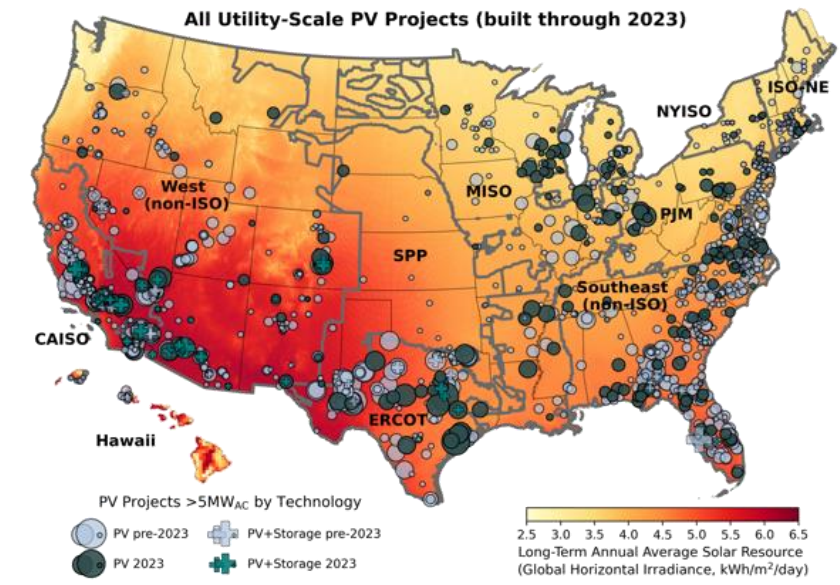
Explore the **"Multi-decadal, Multi-technology, Multi-Terawatt & Multi-Trillion-dollar GigaTrend"** *on our website: https://www.valuequest.in/gigatrend/*

Warm Regards,
Ravi Dharamshi

Founder & CIO
ValueQuest Investment Advisors Pvt. Ltd.

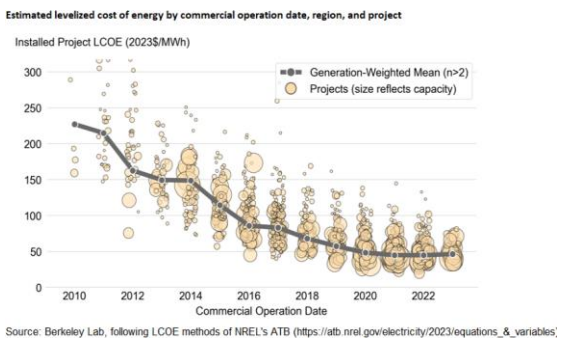
Annexure

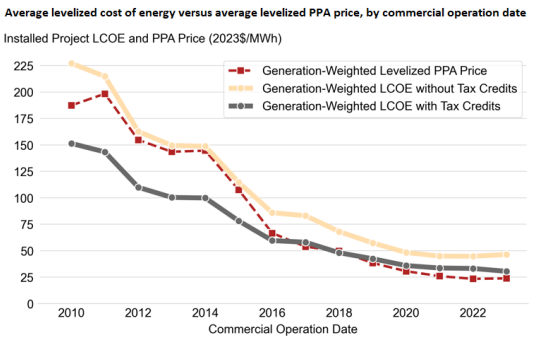
Southern part of USA receives higher radiation. Thus, it is the recipient of maximum Solar PV projects. Except California, most major southern states are Republican states



Sources: National Renewable Energy Laboratory (NREL)

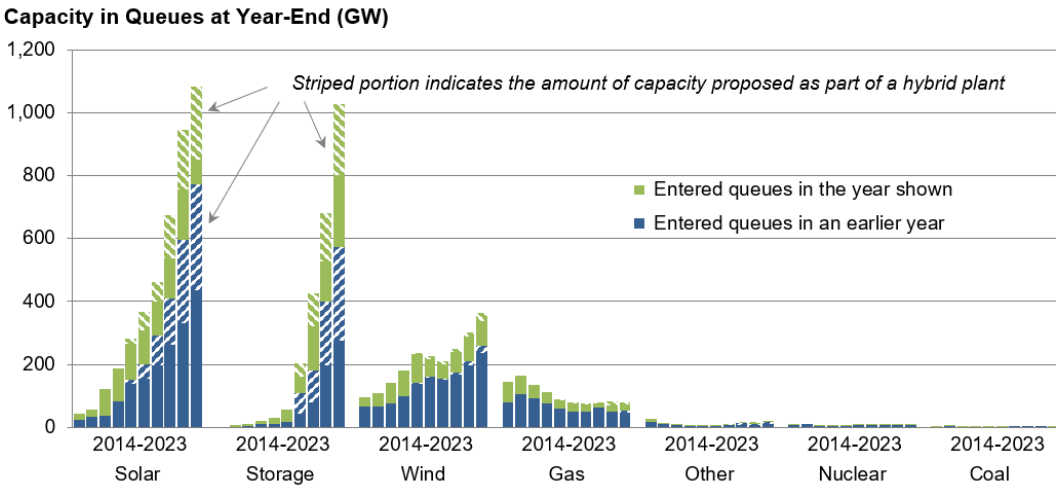
LCOE (Levelized Cost of Energy): significant improvements & reducing dependence on tax credits

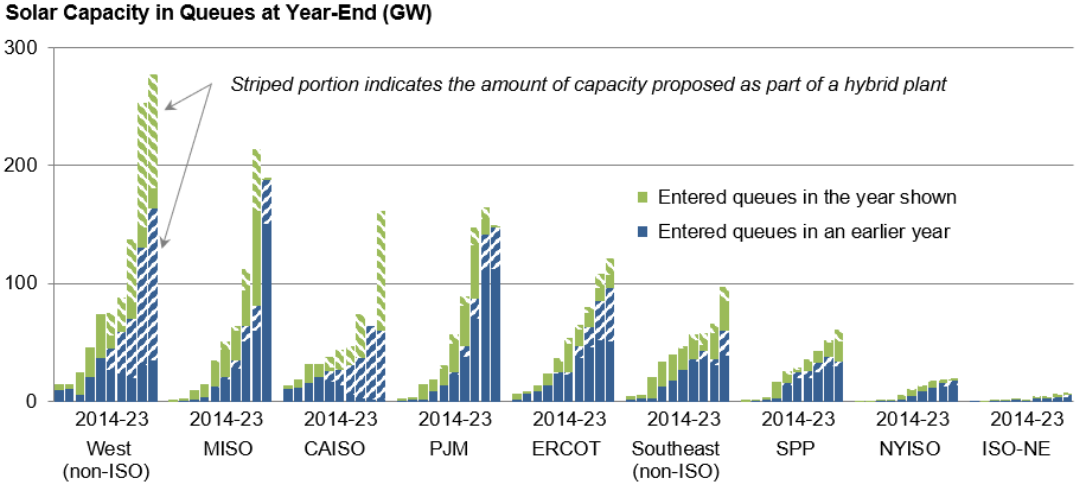




Nearly 1000GW of Solar & 1000GW of storage is being planned

Generation and storage capacity in 51 selected interconnection queues from 2014 to 2023, by resource type





Source: Berkeley Lab review of interconnection queues

Distribution of Solar assets across states (Majority under Republican states)

STATES	Ruled By	Solar PV Area	Solar DC (MW)	% Area	% Solar PV
California	Democrat	398,919,027	20,015	25%	22%
Texas	Republican	283,498,082	13,651	18%	15%
Florida	Republican	136,883,457	9,350	9%	10%
North Carolina	Republican	119,664,396	8,108	7%	9%
Georgia	Republican	76,926,900	4,718	5%	5%
Nevada	Republican	65,239,284	3,892	4%	4%
Arizona	Republican	62,426,427	3,228	4%	4%
Virginia	Democrat	60,987,507	3,797	4%	4%
Colorado	Democrat	42,792,928	2,220	3%	2%
Utah	Republican	42,730,560	1,975	3%	2%
South Carolina	Republican	32,600,353	1,875	2%	2%
Minnesota	Democrat	26,282,328	1,547	2%	2%
New Mexico	Democrat	25,846,439	1,158	2%	1%
New York	Democrat	21,689,224	1,435	1%	2%
Oregon	Democrat	20,371,624	1,071	1%	1%
Massachusetts	Democrat	20,003,050	1,475	1%	2%
Illinois	Democrat	17,774,484	1,035	1%	1%
Wisconsin	Republican	17,373,057	1,033	1%	1%
Alabama	Republican	14,123,514	818	1%	1%
New Jersey	Democrat	12,271,958	972	1%	1%
Ohio	Republican	11,130,569	656	1%	1%
Idaho	Republican	10,814,756	519	1%	1%
Tennessee	Republican	9,618,143	520	1%	1%
Indiana	Republican	9,038,799	718	1%	1%
Total		**1,605,532,313**	**90,354**	**100%**	**100%**

Party wise	% Area	% Solar PV
Democrat	42%	41%
Republican	58%	59%

Data as of November 2024

Source : Lawrence Berkeley National Laboratory Energy Markets and Policy Department

Annual Solar PV installations at USA for 2017-2023

Installation Year	Residential PV		Commercial PV		Utility PV		TOTAL		
	Annual Capacity MW_{DC}	Cumulative Capacity MW_{DC}	Annual Capacity MW_{DC}	Cumulative Capacity MW_{DC}	Annual Capacity MW_{DC}	Cumulative Capacity MW_{DC}	Annual Capacity MW_{DC}	YoY %	Cumulative Capacity MW_{DC}
2007	58	191	93	264	9	14	229		894
2008	77	268	190	454	22	35	289	26%	1,182
2009	157	425	208	662	70	105	435	51%	1,617
2010	246	671	337	999	457	562	1,114	156%	2,731
2011	305	976	850	1,849	1,226	1,788	2,381	114%	5,112
2012	496	1,471	1,075	2,924	2,398	4,186	3,969	67%	9,081
2013	799	2,270	1,109	4,033	3,749	7,935	5,907	49%	14,988
2014	1,268	3,538	1,055	5,088	3,673	11,608	6,873	16%	21,861
2015	2,171	5,709	1,070	6,158	4,790	16,398	8,141	18%	30,002
2016	2,638	8,348	1,715	7,873	10,940	27,337	15,293	88%	45,295
2017	2,239	10,587	2,366	10,238	7,217	34,554	11,822	-23%	57,117
2018	2,417	13,004	2,196	12,434	6,239	40,793	10,852	-8%	67,968
2019	2,864	15,867	2,185	14,620	8,732	49,525	13,781	27%	81,749
2020	3,261	19,128	2,383	17,003	14,033	63,558	19,677	43%	101,426
2021	4,252	23,380	2,654	19,657	16,598	80,155	23,504	19%	124,930
2022	6,043	29,423	2,676	22,333	12,752	92,908	21,472	-9%	146,402
2023	6,812	36,235	2,999	25,333	22,547	115,454	32,358	51%	178,760

Source : Lawrence Berkeley Lab National Lab Energy markets

Data as of November 2024

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