CLEAN ENERGY FOR AMERICA

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Biden's priority of a clean energy economy will be a pipedream and may lead to political backlash without a concrete implementation. Successful implementation will need consideration of technical and business challenges, proactive utilities, and a private sector willing to put skin in the game.

THE SUCCESS OF BIDEN'S PLAN FOR A CLEAN ENERGY REVOLUTION DEPENDS ON PROACTIVE UTILITIES AND INDUSTRY WITH LONG TERM COMMITMENT TO CHANGE

Executive orders can be viewed as an opening salvo in setting the agenda for negotiations or with nervousness and distrust in partisan politics. However, a key lesson from the last 4 years of the Trump Administration is that despite adverse governments, economics drives clean energy transformation. Many climate activists who were disheartened by Trump's election will admit that they put too much credence in the ability of federal government to change the course of customer preferences and business case for clean energy.

Having said that, governments can play a big role changing pace through mandates, incentives, and penalties. 75% of CLEEN, a database of 180 "actionable ideas" to address issues like climate change, investment in infrastructure, and advancement of environmental justice focuses on energy, transit, and manufacturing initiatives. However, all pundits agree we have a problem of implementation and not of ideas.

Outlined in Biden's plan are proposed investments of $5 trillion with the federal government proposing $2 trillion over the next 4 years. This is intended to create 10 million clean energy jobs and address climate change through initiatives focused on decarbonizing energy, establish low-carbon industries, infrastructure development, and environmental justice.

Key to the Biden's climate actions is decarbonization of the three sectors: Energy, Transportation, and Industrial. All three of these areas have a sizable impact on climate but are also economic engines that support current jobs. Hence implementation is key to avoid the disruption of livelihoods.

Biden's Build Back Better plan will not yield the desired benefits if it fails to attract private investments. In this edition, we discuss key elements of Biden plan, industry implications and opportunities. We have some bold recommendations for the implementation of the plan which will need committed environmental, social, and governance (ESG) investors, deep understanding of regulatory and technology risks and unshackled proactive utilities.

The Build Back Better plan calls for investments focused on addressing climate, environmental justice, and infrastructure. However, the down payment committed by the Biden plan will need proactive, willing ESG investors and utilities

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BUILD BACK BETTER – BOLD CLEAN TRANSFORMATION VISION

The parts of Biden's plan focused on three pillars of US economy will touch roughly 27 million employed in manufacturing, construction, transportation, mining, and utilities sector. Below are some key areas of focus in the plan.

- **$2 Trillion Federal Investment:** Federal investment of 2 trillion dollars in the next 4 years to jumpstart a renewed focus on clean energy, the auto industry, conservation, environmental justice, housing, transit, and more.
- **Decarbonization of electricity supply by 2035:** Achieving a carbon-free power sector by 2035, and a 100% clean energy economy by 2050.
- **Zero emissions in public transportation:** Federal government procurement of zero-emission vehicles only (which spends $500 billion annually) to drive towards 100% zero-emissions vehicles.
- **Decarbonization of Industrial sector:** The enactment of a national strategy to develop a low-carbon manufacturing sector in every state.

Down payment investments in clean energy: Out of an estimated $5 trillion needed in the next decade to establish a clean energy economy, the initial $2 trillion investment by the US government in the next four years is the crucial down payment. Bold action by the US government to take upfront risks can lead to the development of market at scale. This is especially key as the private and state sectors recover from the pandemic. Biden's plan creates a new Advanced Research Projects Agency focused on climate, ARPA-C, to identify technologies to help America achieve the 100% clean energy target and reflects Biden's campaign commitment of investing $400 billion in clean energy innovation and procurement in his first term. Biden's plan also sets a goal that 40% of the overall benefits of spending around clean energy and energy efficiency, clean transportation, affordable and sustainable housing, workforce development, pollution remediation, and development of clean water infrastructure goes to disadvantaged communities[1].

Decarbonize energy supply: There is a massive push from the new administration to decarbonize the power sector by 2035. The proposed pathway to this is the establishment of a technology-neutral Energy Efficiency and Clean Electricity Standard (EECES) for utilities and grid operators[2]. The EECES will use clean energy production and purchase mandates based on already established best practices from state-level CES. The plan has also outlined a 2035 target of reducing the carbon footprint of the U.S. building stock by 50%. A requirement to achieving this goal will be the creation of incentives for deep retrofits, combining efficient appliances with building electrification and on-site generation.

Clean Electric Transportation and Vehicles (EVs): Decarbonization goals around transportation include all new American-built buses be zero-emissions by 2030, converting all school buses to zero-emission vehicles, and providing cities with 100,000 or more residents with zero-emissions public transportation options using federal investments. The plan has linked the expansion of clean transportation with an investment in the US auto industry, citing the creation of one million new jobs in automotive and EV supply chains.

The plan calls for the restoration of the Clean Air Act, and the development of new fuel economy standards aimed at getting 100% of new sales for light- and medium-duty vehicles to be electric and substantial improvements for heavy-duty vehicles. A key target included in Biden's plan is to support the deployment of more than 500,000 new public charging outlets by the end of 2030.

Low carbon industry: The decarbonization of industry is tied to climate goals but has a strong focus on economic revitalization and job creation through Biden's proposed "Buy American" $400 billion procurement investment initiative[3], which is linked to Biden's clean energy and infrastructure plan to create a demand for made in USA products.

The Biden plan wants to enact a national strategy to develop a low-carbon manufacturing sector in every state to address the 22% of greenhouse gas emissions attributed to the industrial sector of the economy[4]. This policy is tied to accelerating advanced technologies, bringing back supply chains to US shores, and initiatives to ensure job training and access to new technologies to establish low-carbon processes. The renewal and retooling of US industry are stated to establish at least 5 million new jobs in manufacturing and innovation. This is continuation of US policy and will find bipartisan support.

[1] https://joebiden.com/clean-energy/
[2] Ibid
[3] https://joebiden.com/made-in-america/
[4] https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

INDUSTRY IMPLICATIONS AND OPPORTUNITIES

The Biden plan has far-reaching implications for the US economy, but success depends on how utilities and the clean energy industry play their roles in this low-carbon future. Following are key implications and expected actions.

Need for Public-Private partnerships in a green energy future

Government's role in investing in innovation, research, technology, and infrastructure: The establishment of ARPA-C will provide an opportunity for investment in much-needed technologies such as battery storage, electric fleets, etc. This, coupled with an increase in federal investments and enhanced tax incentives for Carbon Capture, Use, and Storage (CCUS), could be a way for utilities to decarbonize their electricity production, optimize renewable sources to meet clean energy goals, and serve customers. Utilities should pursue more business model demonstrations working with the private sector with risk mitigation through Federal assistance.

ESG investment from the private sector needs to be guided and rational: Driven by a social and environmental justice focus, investors are turning towards green investing. However, understanding risks, especially related to technology, utility regulations, policies, and implementation difficulties, is the key to ensuring a successful ESG investment. Many investors need to be guided by new insights and point of views and need to shun old beliefs and expectations of returns in short term. A long-term strategy is needed to reap benefits.

Utilities that have not been able to decarbonize their asset base because they lack the capital can benefit from establishing ESG goals to showcase their investment potential for new clean energy technologies and infrastructure. Here utilities and ESG investors need to work together and understand their goals and challenges. Deep understanding of utility industry will be a must for the ESG investors.

Lastly, more guidance on the disclosures of Environmental, Social, and Governance criteria (ESGs) is expected under the plan. More than 90 percent of the US investor-owned electric power industry is currently using an ESG or sustainability reporting format to provide information to investors[5].

Regardless of how advanced their ESG assets are, utilities should be proactive in their interactions with the SEC and cannot wait for new rules and regulations to be handed down to them. There is a risk in the implementation of a "one-size fits all" policy that will be detrimental to letting ESG investment flourish across multiple sectors.

Provide incentives and market mechanisms to pay for decarbonization: While there is no plan for implementation of a carbon tax in the current platform, Secretary of the Treasury Janet Yellen stated last year that a carbon tax under a Biden Administration would be possible[6]. Yellen is a founding member of the Climate Leadership Council, an international policy institute founded to promote a carbon dividends framework as a cost-effective climate solution[7].

Even if carbon prices are not established at a national level, state and regional cap-and-trade carbon markets will remain. Utilities should not assume that carbon pricing will be phased out. If a carbon tax is established, it would most likely take a form like what is proposed by the Climate Leadership Council's 2020 Bipartisan Climate Roadmap, where a fee would be placed on carbon that would slowly rise year over year.

Utilities need to integrate and operate with 100% clean energy

Accelerate CES target achievement: Twenty-nine states, three territories, and Washington D.C. have adopted a renewable or clean energy standard, and dozens of utilities across the US have 2030 or 2050 carbon reduction goals. However, this will not be adequate for a carbon-free power sector in 14 years. Hence utilities need to enhance their procurement plan targets to contract all their energy needs within the next 10 years through clean energy sources. This will raise issues of current contracts, ratepayer burden, and future planning. Utilities need to be careful about signing new long-term supply contracts if carbon is part of the portfolio.

Utility ownership of flexibility resources in initial stages: Given the intermittency of renewables, grid-level flexibility and storage will be needed to integrate large renewables. These massive flexibility needs cannot be met through the private sector participation alone. Utilities

[5] https://www.spglobal.com/platts/en/market-insights/latest-news/coal/121819-impact-of-esg-on-us-utility-sector-could-be-profound-promised-co2-reductions-transformative

[6] https://money.usnews.com/investing/news/articles/2020-10-08/us-could-adopt-carbon-tax-under-a-biden-presidency-ex-fed-chair-yellen

[7] https://clcouncil.org/

should be allowed to own investments of grid flexibility resources such as storage and other DERs. There shall be caps on utility ownership to allay fears of monopoly. An approach like this would enable for much faster adoption of storage while ensuring that market competition is not displaced. Focus should be on transparency, not mistrust.

Invest into digital transformation to enable clean energy adoption: Further, utilities need to invest in automation and grid modernization to continue safe, reliable operations. They should take advantage of machine learning, and artificial intelligence to optimize their operations. However, caution should be exercised to not make mistakes like overhyped investments in smart metering/smart grids.

Address the concerns about stranded assets by fossil fuel generators: About 38% of electricity production in the United States is produced by natural gas[8], the average age of these plants' is decades younger than other sources like coal or nuclear. Providing a path to monetize current fossil assets should be a key element of a sustainable decarbonization path for the energy sector. Options to convert the plants to use renewable natural gas or even hydrogen will require additional investment. This may involve a certain level of socialization of the costs associated with the conversion or retirement of coal/gas plants.

Utilities will be expected to serve a rapidly growing number of electric vehicles

Understand the current limits of the grid and how that impacts the potential growth of EVs: There are already issues that have emerged with the installation of EV charging stations, and electric vehicles make up less than 2% of the US market[9]. Increased demand for charging infrastructure will exacerbate these problems unless large investments in grid and utility infrastructure are made. DC fast-charging stations are convenient for drivers, but the demand they place on a local grid means that upgrades are often needed to support their installation. This limits the number of available charging stations, but the fewer the public charging stations available, the less confident drivers are of their investment in an electric vehicle.

Increased demand on the grid must be acknowledged: As utilities will be expected to support the decarbonization of transportation through the interconnection of charging stations, they should be proactive in planning for increased electric vehicle infrastructure and adoption. Grid-level assessments should be done to determine where EV infrastructure can be supported now, as well as incorporating EV infrastructure development into already planned grid upgrades.

The cost of EV infrastructure development should not be passed onto consumers: Charging infrastructure development requires that ratepayers do not carry an undue burden. Federal grants to convert vehicles and pay for charging infrastructure are vital for the electrification of transportation to support early movers in this sector.

Utilities should be allowed some ownership of charging infrastructure: Utilities are most often prohibited from outright owning EV charging stations, but to support the rapid growth set by the current Administration, at least some utility ownership will be needed. This is true in areas where private investment in EV charging infrastructure has been avoided. Low and Medium Income (LMI) communities or Environmental Justice (EJ) communities have historically been impacted the most by emissions from transportation, but EV investment in these areas is prevented because of their low rate of EV adoption. Utilities should push for some level of charger ownership in these communities to support local, state, and Federal environmental justice initiatives.

Industrial Customers will need help from utilities to decarbonize

Utilities need to establish active partnerships with their large C&I customers: Utilities should be proactive in addressing the clean energy and resiliency needs of their customers. Opportunities to host microgrids and on-site energy storage, as well as providing them with a cleaner energy mix overall, will be necessary.

Utilities and Industry can gain benefits from resiliency measures: Climate change is laying bare utilities claims of a reliable and uninterrupted supply. Utilities should work with large C&I customers to leverage customer sited DERs capabilities. This will help optimize clean energy investments and increase resiliency should the wider grid go down. Utilities should be prepared to capitalize on the demand for the electrification of buildings, weatherization and "smart" devices that will allow more consumer oversight and more refined control over building functions.

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[8] https://www.eia.gov/energyexplained/us-energy-facts/data-and-statistics.php

[9] https://www.bloomberg.com/news/articles/2020-11-12/biden-means-sales-boost-for-volkswagen-gm-tesla-tsla-electric-car-makers

Our recommendations are key tangible implementation actions. These do's and don'ts translate Biden's plan into to reality.

Our recommendations

- ✓ Government must **insist on business model innovation and private sector investments** as a condition of its investment in a clean energy economy.
- ✓ **Do not rely on mandates/ dictates** but on American innovation and entrepreneurship.
- ✓ There is no dearth of policies, so the **focus on implementation to realize vision of good paying green jobs**.
- ✓ **ESG investors should understand technology, market, and regulatory risks** to ensure they do not invest in stranded assets.
- ✓ **ESG investors take a long-term view** and deep understanding of changing customer preferences and the role of the utility sector**.**
- ✓ **Utilities should be proactive and strategic** in leveraging energy technologies funding and opportunities under the proposed ARPA-C.
- ✓ The **risk of stranded energy assets is very real.** Federal government should not ignore need of current investors for an orderly transition.
- ✓ Push for electrification is great but **understand limitation of aging electric distribution infrastructure** and support investments accordingly.
- ✓ Utilities should **build partnerships with their C&I customer base** to increase resiliency, and clean energy generation.
- ✓ **Federal government should not become hurdle in innovation**, do not choose sides and let the market pick winners and losers.

We believe that utilities and private sector taking proactive measures to respond to the Biden Administration's call to decarbonize American economy will shape the future energy landscape, provided we have all hands-on deck to implement ideas instead of making policies.

There is a generational opportunity for the ESG investors, government, utilities, and customers to transform US economy. We need long term, implementation focused, and market led approaches. The Federal government can provide support if industry leads.

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Vrinda Inc. is a New York-based business and technology firm. Vrinda Inc. creates success for your business through a focus on value creation by providing trusted, actionable advice, and practical solutions. We provide business and technology consulting services to the Energy, Utility, and Transportation sectors. Vrinda operates in the United States and Latin America and brings cutting edge expertise to the utility industry. www.vrindainc.com

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