

# Electrification in the DOD

Background, Policy, Challenges and Opportunities

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# Agenda

- Background for Electrification
- Federal Electrification Policy and Guidance
- DoD Specific Electrification Policy
- Challenges and Barriers
- Role of the Private sector in Electrification

# Background information

- The U.S. government began electrifying America in the 1930s with the establishment of the Rural Electrification Administration (REA) as part of President Franklin D. Roosevelt's New Deal. The REA was created in 1935 to bring electricity to rural areas, which were largely unserved by the existing power grid. This initiative marked a significant step in the government's efforts to electrify the nation, improving quality of life and economic opportunities in rural communities .
- Government set up TVA to help Electrify the country
- Today we can't survive or run a business without electricity
- Power metering mandated in EPAAct 2005/EISA 2007

# Federal Electrification Policy and Guidance

- The U.S. government's electrification policy is designed to accelerate the transition to clean energy across various sectors, reduce greenhouse gas emissions, promote economic growth and job creation.
- **Key initiatives include:**
  - Electrifying the transportation sector
  - Improving building energy efficiency
  - Modernizing the power grid
  - Developing clean energy technologies.

# Federal Electrification Policy and Guidance

## Transportation Electrification

### Electric Vehicles (EVs):

The Biden-Harris Administration aims to have 50% of all new vehicle sales be electric by 2030. This includes battery electric, plug-in hybrid electric, or fuel cell electric vehicles.

The administration has set a goal to electrify all new light-duty vehicles by 2027 and has committed to building a nationwide network of 500,000 electric vehicle charging stations.

The Inflation Reduction Act provides tax credits for the purchase of new and used EVs, incentives for electrifying heavy-duty vehicles like school buses, and support for residential, commercial, and municipal EV charging infrastructure.

### Federal Fleet Electrification:

- The government is leading by example by electrifying the federal fleet, including U.S. Postal Service vehicles

# Federal Electrification Policy and Guidance

## **Building Electrification - Energy Efficiency and Decarbonization:**

- The government is promoting the decarbonization and electrification of buildings through various initiatives. This includes encouraging the use of clean electricity for home heating, cooking, and hot water.
- The Bipartisan Infrastructure Law and Inflation Reduction Act provide funding for energy efficiency and electrification projects in buildings.

## **Energy Infrastructure - Clean Power Grid:**

- The U.S. aims to achieve a 100% carbon pollution-free electricity grid by 2035. This involves significant investments in wind, solar, geothermal, hydropower, nuclear, and biomass energy sources.
- The Grid Modernization Initiative is working to establish a concerted vision for the future power grid and pursue a grid modernization strategy to support the clean energy transition.

## **Renewable Energy and Storage:**

- The government is investing in renewable energy capacity, nuclear lifetime extensions, and new builds. The goal is to reduce emissions and improve energy efficiency.
- The Inflation Reduction Act includes provisions for clean electricity tax credits, faster permitting of transmission, and investment in battery storage.

# Federal Electrification Policy and Guidance

## Policy and Funding

### Legislation and Funding:

- The Bipartisan Infrastructure Law and Inflation Reduction Act are key pieces of legislation providing significant funding for electrification and decarbonization efforts. These laws allocate billions of dollars for clean energy projects, EV charging infrastructure, and energy efficiency improvements.
- The Empowering Rural America (New ERA) program is providing over \$7.3 billion in financing for rural electric cooperatives to build clean energy infrastructure.

### State and Local Support:

- The federal government is working with state and local governments to leverage federal funds for electrification projects. This includes support for electrifying vehicle fleets and building charging infrastructure in underserved communities.

# DoD Electrification Policy

The Department of Defense (DOD) has been actively pursuing electrification policies to enhance its energy security, reduce greenhouse gas emissions, and improve operational efficiency. Here are the key aspects of the DOD's electrification policy.

The DOD's electrification policy is a comprehensive approach to enhancing energy security, reducing environmental impact, and improving operational efficiency. By investing in renewable energy, electric vehicles, energy efficiency, and advanced energy technologies, the DOD is positioning itself to meet the energy challenges of the 21st century. Collaboration with industry, academia, and government agencies is key to the successful implementation of these policies.



# DoD Electrification Policy

## **1. Renewable Energy and Microgrids**

The DOD is investing in renewable energy sources such as solar, wind, and geothermal to power its facilities and reduce reliance on fossil fuels. Microgrids, which can operate independently of the main power grid, are being developed to ensure energy resilience and support critical operations during power outages.

## **2. Electric Vehicle (EV) Adoption**

The DOD is transitioning its non-tactical vehicle fleet to electric vehicles to reduce emissions and fuel consumption. This includes the procurement of electric vehicles for administrative and logistical purposes, as well as the development of charging infrastructure on military bases.

## **3. Energy Efficiency and Conservation**

The DOD is implementing energy efficiency measures across its facilities to reduce energy consumption. This includes upgrading to energy-efficient lighting, HVAC systems, and building materials, as well as promoting energy conservation practices among personnel.

## **4. Research and Development (R&D)**

The DOD is investing in R&D to develop advanced energy technologies. This includes research into battery storage, renewable energy integration, and energy management systems to support the electrification of military operations.

## **5. Collaboration with Industry and Academia**

The DOD is collaborating with private sector entities and academic institutions to accelerate the development and deployment of new energy technologies. This includes partnerships for R&D projects, pilot programs, and technology transfer initiatives.

# DoD Electrification Policy

## **6. Policy and Regulatory Framework**

The DOD is establishing policies and regulations to support its electrification efforts. This includes guidelines for the procurement of electric vehicles, the development of renewable energy projects, and the implementation of energy efficiency measures.

## **7. Training and Workforce Development**

The DOD is investing in training and workforce development to ensure that military personnel have the skills needed to operate and maintain electrified systems. This includes training programs for energy managers, vehicle technicians, and renewable energy specialists.

## **8. Sustainability and Environmental Considerations**

The DOD is integrating sustainability and environmental considerations into its electrification policies. This includes conducting environmental impact assessments for new energy projects, minimizing the environmental footprint of military operations, and promoting the use of clean energy technologies.

## **9. Funding and Financial Incentives**

The DOD is allocating funds and providing financial incentives to support electrification projects. This includes budget allocations for renewable energy development, EV procurement, and energy efficiency upgrades.

## **10. Strategic Energy Planning**

The DOD is engaging in strategic energy planning to ensure that its electrification efforts align with broader national security objectives. This includes long-term planning for energy infrastructure, technology adoption, and energy resilience.

# What are the challenges and potential barriers to implementing the US government's electrification policy?

## **1. Pace of Transition**

One of the primary challenges is the rapid pace required for the transition to electrification. The ambitious goals set by the government, such as achieving a 100% carbon pollution-free electricity grid by 2035, necessitate a swift and coordinated effort across various sectors. This rapid transition can be difficult to manage and may lead to logistical and operational challenges.

## **2. Technology Advancement**

The development and deployment of new technologies are crucial for successful electrification. However, the current state of technology may not be sufficient to meet the demands of a fully electrified system. This includes advancements in battery storage, renewable energy sources, and grid management technologies.

## **3. Infrastructure Siting**

Building the necessary infrastructure for electrification, such as charging stations and transmission lines, is a significant challenge. Finding suitable locations for these installations can be difficult due to land use regulations, community opposition, and environmental concerns.

## **4. Equipment Cost**

The high cost of equipment, such as electric vehicles, heat pumps, and renewable energy systems, can be a barrier to widespread adoption. These costs can be prohibitive for many consumers and businesses, especially in low-income and rural areas.

## **5. Supply Chains**

The global supply chains for critical components, such as batteries and semiconductors, are complex and vulnerable to disruptions. Ensuring a stable and reliable supply chain is essential for the smooth implementation of electrification policies.

## **6. Human Resources**

The availability of skilled labor to install, maintain, and operate new electrification technologies is another challenge. There may be a shortage of trained professionals in areas such as electric vehicle mechanics, renewable energy technicians, and grid operators.

## **7. Policy and Regulatory Barriers**

Policy and regulatory frameworks can either facilitate or hinder electrification efforts. Inconsistent policies across different states and localities, as well as regulatory hurdles, can slow down the implementation process. Additionally, the lack of a unified national strategy can lead to fragmented efforts and inefficiencies.

# What are the challenges and potential barriers to implementing the US government's electrification policy?

## **8. Economic and Financial Barriers**

High and volatile electricity costs can deter industries from electrifying their processes. The financial burden of upgrading infrastructure and purchasing new equipment can be significant, especially for small and medium-sized enterprises.

## **9. Consumer Acceptance**

Consumer acceptance of new electrification technologies is crucial for their widespread adoption. Factors such as consumer awareness, perceived benefits, and concerns about reliability and cost can influence acceptance levels.

## **10. Grid Impacts**

The integration of large amounts of renewable energy and electric vehicles into the grid can pose challenges. Ensuring grid stability and reliability while managing the variability of renewable energy sources is a significant technical challenge.

## **11. Information and Incentive Mismatch**

Inadequate information and misaligned incentives can hinder electrification efforts. Consumers and businesses may lack the necessary information to make informed decisions, and existing incentives may not be sufficient to drive widespread adoption.

## **12. Regulatory Standards for Energy Storage**

The lack of standardized regulatory frameworks for energy storage can create barriers. Without clear guidelines, the development and deployment of energy storage solutions can be hindered.

These challenges and barriers highlight the complexity of implementing the U.S. government's electrification policy. Addressing these issues will require a coordinated effort involving technological innovation, policy reform, and public and private sector collaboration.

# Role of Private Sector Entities in Electrification Policy

Private sector entities play a crucial role in the electrification policy by contributing to the deployment of **innovative technologies**, **financing**, and **operational** expertise. They are involved in various aspects of electrification, including the development and maintenance of infrastructure, the provision of renewable energy solutions, and the implementation of energy efficiency measures. Their participation is essential for achieving the government's goals of increasing access to electricity services and promoting a sustainable energy transition.

By employing these strategies, governments can create an ecosystem that encourages and supports private sector participation in electrification efforts, ultimately accelerating the transition to a more sustainable and equitable energy system.

# Questions

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