

# Addressing U.S. Advanced Manufacturing and Clean Energy Technology Challenges

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Cellulose Nanomaterials – A Path Towards Commercialization Workshop

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[www.manufacturing.energy.gov](http://www.manufacturing.energy.gov)

# Products invented here, now made elsewhere



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# AMO is a member of the Advanced Manufacturing Partnership

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## The Advanced Manufacturing Partnership



Spark a renaissance in American manufacturing through public private partnerships that help our manufacturers compete with anyone in the world

[www.manufacturing.gov](http://www.manufacturing.gov)

## U.S. Dept. of Energy

*Office of Energy Efficiency  
and Renewable Energy*

Strengthen America's energy security, environmental quality, and economic vitality through enhanced energy efficiency and productivity

## Advanced Manufacturing Office

Co-invest with private and public partners to improve U.S. competitiveness, save energy, create high-quality domestic manufacturing jobs and ensure global leadership in advanced manufacturing and clean energy technologies

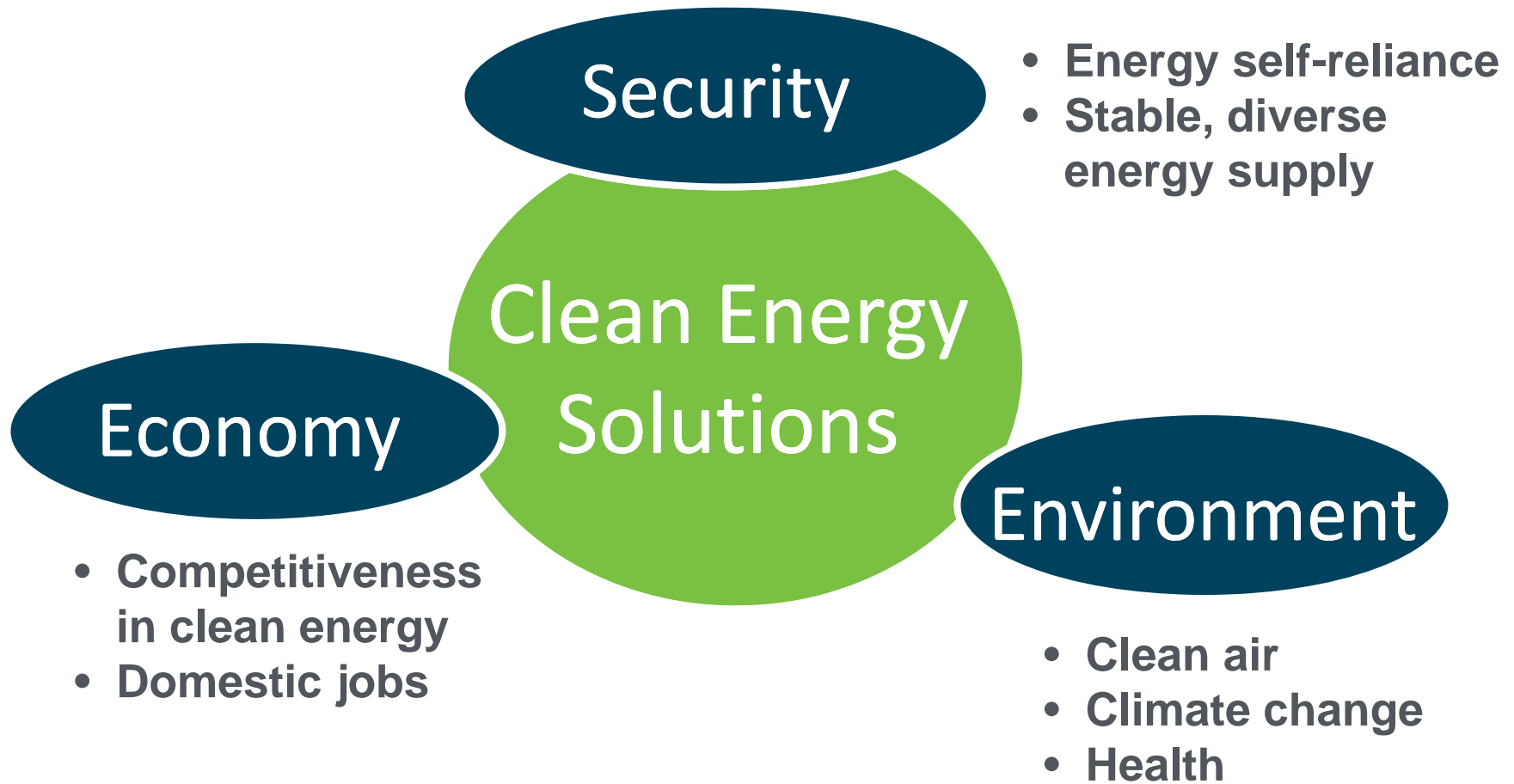
[www.manufacturing.energy.gov](http://www.manufacturing.energy.gov)

**ENERGY**

Energy Efficiency &  
Renewable Energy

# Clean Energy: A Top Administration Priority

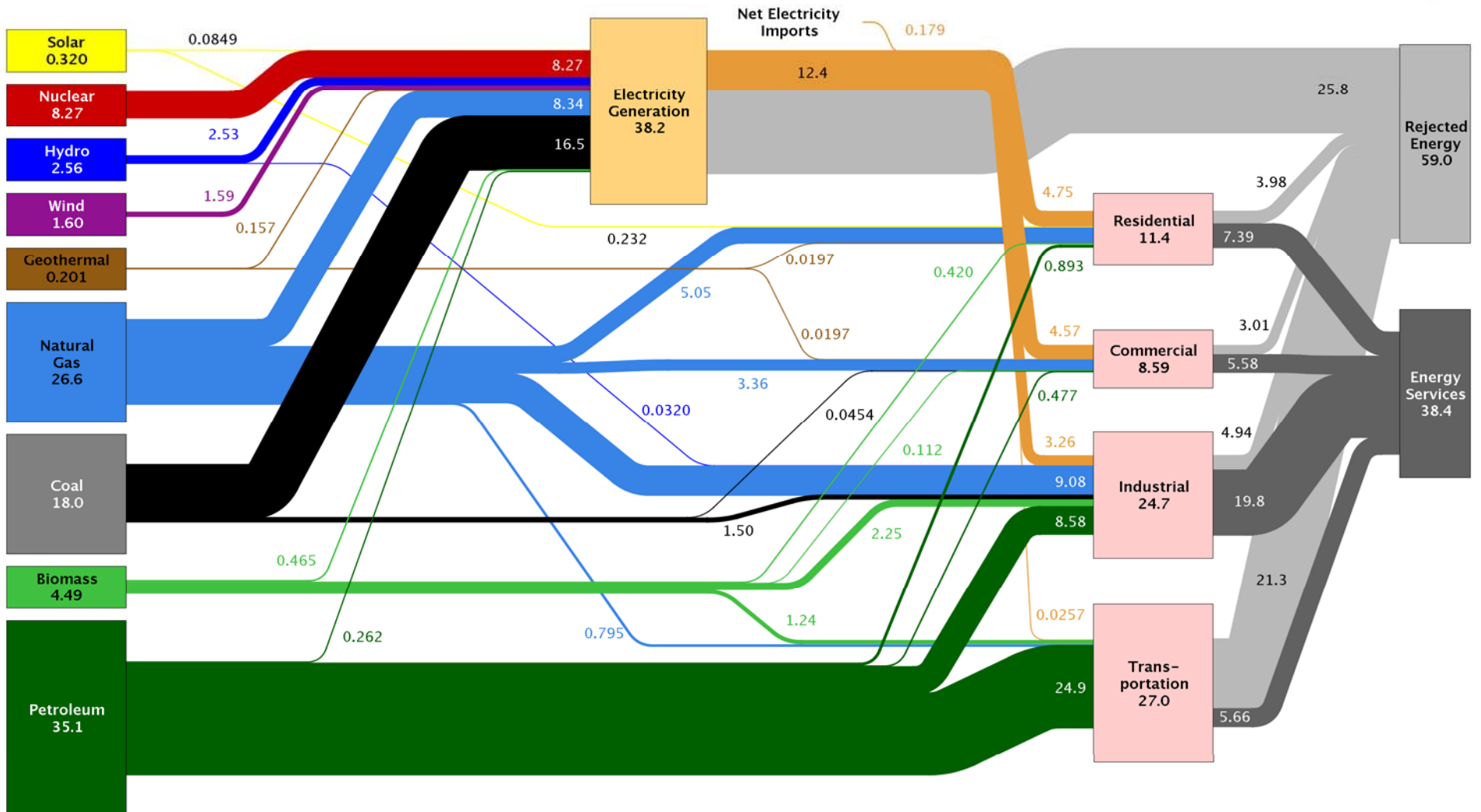
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# Why we need Energy Efficiency

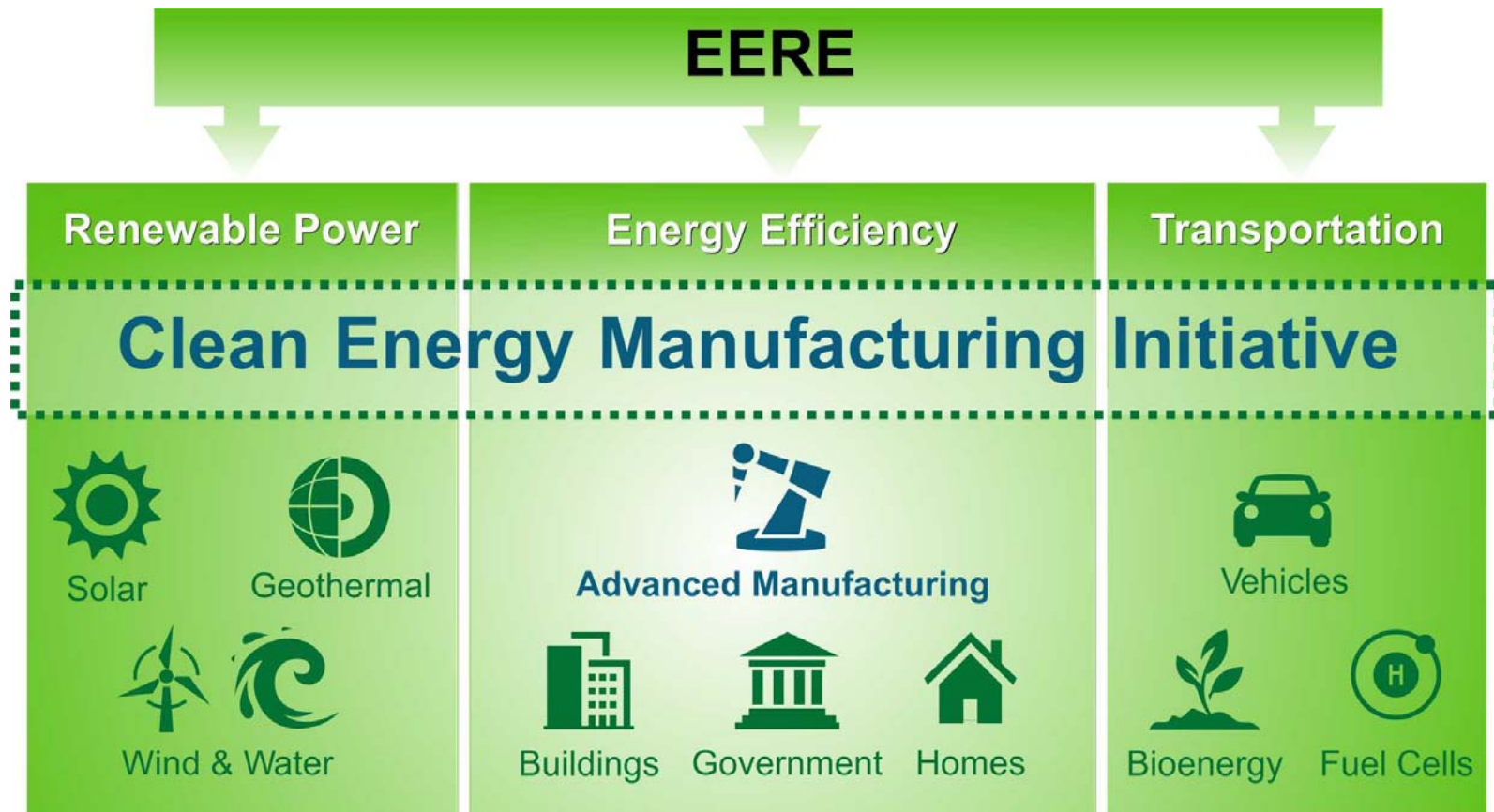


Estimated U.S. Energy Use in 2013: ~97.4 Quads



Source: LLNL 2014. Data is based on DOE/EIA-0035(2014-03), March, 2014. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports consumption of renewable resources (i.e., hydro, wind, geothermal and solar) for electricity in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 65% for the residential and commercial sectors 80% for the industrial sector, and 21% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

# AMO and the Office of Energy Efficiency and Renewable Energy (EERE)



Collaboration toward:

- Common goal to collectively increase U.S. manufacturing competitiveness

Coordination for:

- Clean Energy Manufacturing Strategies
- National Clean Energy Mfg Programs

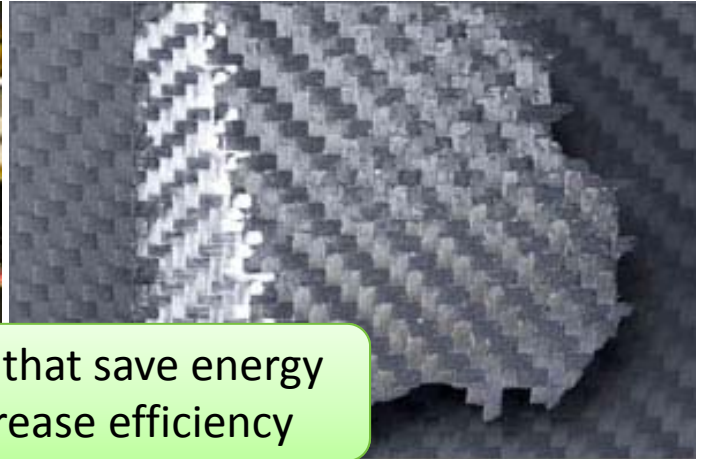
# EERE Core Questions for Investments

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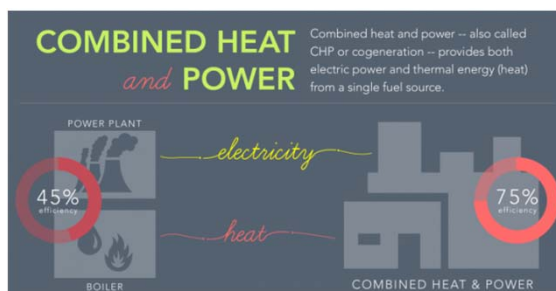
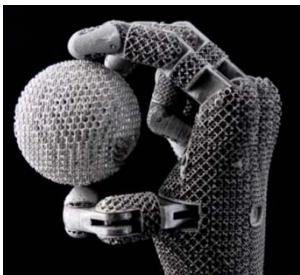
1. **High Impact** — Is this a high-impact problem?
2. **Additionality** – Will the Federal funding make a large difference relative to what the private sector is doing?
3. **Openness** – Are we open to new ideas, approaches or parties in the broad problem to be solved?
4. **Enduring Economic Benefit** – How will this Federal funding result in enduring economic benefit to U.S.?
5. **Proper Role of Government** – Does the Federal funding represent a proper high-impact role of government versus something best left to the private sector?

# EERE's Clean Energy Manufacturing Initiative (CEMI)

## 1. Increase U.S. competitiveness in the production of clean energy products



## 2. Increase U.S. manufacturing competitiveness across the board by increasing energy productivity and use of clean and low-cost fuels and feedstocks



Combined Heat & Power





# Shared R&D Facilities

- Address market disaggregation to rebuild the industrial commons

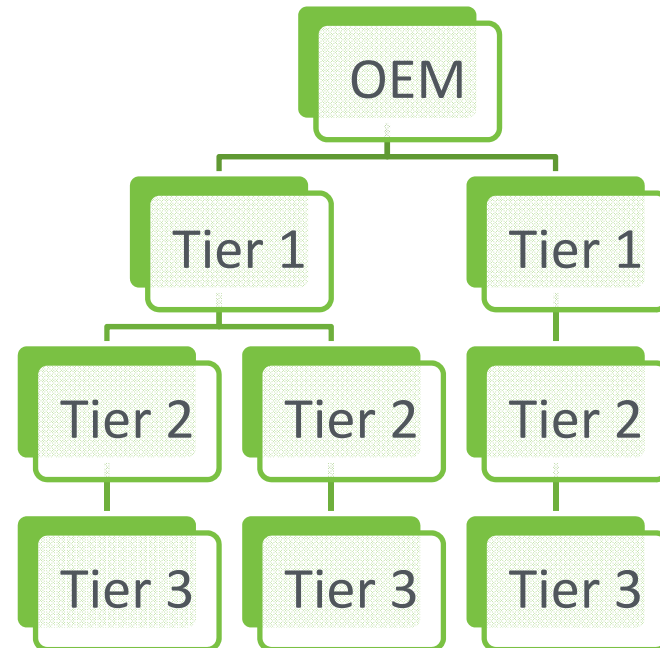
Then



Ford River Rouge Complex, 1920s

Photo: Library of Congress, Prints & Photographs Division, Detroit Publishing Company Collection, det 4a25915.

Now

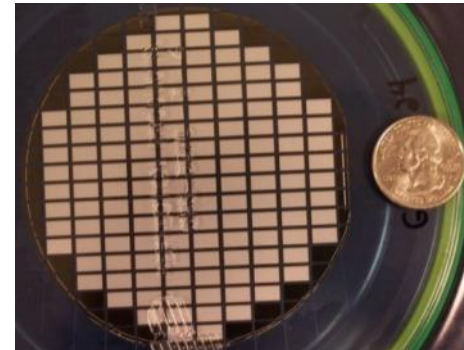


- **How do we get innovation into manufacturing today?**

# AMO-supported R&D Facilities

1. **Manufacturing Demonstration Facility** at Oak Ridge National Laboratory
2. **America Makes**, an interagency National Additive Manufacturing Innovation Institute
3. **Critical Materials Institute: A DOE Energy Innovation Hub** at Ames National Laboratory
4. **Next Generation Power Electronics Manufacturing Innovation Institute**
5. **Composites Materials and Structures Manufacturing Innovation Institute** (future)

*Wide bandgap semiconductors are smaller, lighter, faster, and more reliable power electronic components for more efficient conversion, distribution, and use of electric power.*



# Energy Products Invented Here...

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**...And Made Here!**

