

Clean Energy Smart Manufacturing Innovation Institute

Proposal: A National SMLC Network of Regional Smart Manufacturing Centers



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A Smart Approach to Clean Energy Smart Manufacturing

The Smart Manufacturing Leadership Coalition (SMLC) is bringing together industry, government, manufacturing, and university resources, in public-private partnerships, to respond to a **\$70M funding opportunity from the U.S. Department of Energy** to create a *Clean Energy Manufacturing Innovation Institute on Smart Manufacturing* for Advanced Sensors, Controls, Platforms, and Modeling for Manufacturing.

Importance of Smart Manufacturing

Smart Manufacturing significantly improves productivity, performance, technology adoption, as well as energy and environmental sustainability. It is the use of real-time data, information and communications technology to advance manufacturing intelligence and improve techniques to achieve superior economic and operational performance and productivity. Smart Manufacturing allows small, medium and large manufacturers alike to:

- Become more value-based and responsive to demand driven markets
- Achieve substantially increased productivity, performance and innovation agility
- Accelerate technology adoption
- Grow high quality manufacturing jobs, and
- Significantly improve environmental sustainability, material and energy productivity—all as competitive cost advantages.



Vision for the Institute

SMLC will build a national Smart Manufacturing Industrial Commons comprised of an extensive, universally accessible network of regional centers that incorporate Smart Manufacturing to achieve local and collective objectives.

The **Clean Energy Smart Manufacturing Innovation Institute (CESMII)** will be an industry-led non-profit organization headquartered in Los Angeles, California with networked regional centers across California, Washington, New York, North Carolina and Texas. The Institute will work across business, workforce and technical focus areas, leveraging each region's unique industrial environments.

Test Beds: A Unifying Approach

CESMII will be implemented and sustained through a series of institute-managed, industry-led test beds that are selected to accelerate development, testing, and adoption of Smart Manufacturing technologies.

Test beds will be hosted by manufacturers of different size and sector, which will implement smart manufacturing technologies that enable new opportunities and address constraints for manufacturers individually and collaboratively across their value chains and ecosystems to promote the commercialization and accessibility of the technologies.

Proposal Team:

Together with national and local partners, SMLC will be the lead applicant for the Department of Energy bid.

The SMLC, a nonprofit recognized for its leadership in Smart Manufacturing, forms collaborations to develop approaches, standards, platforms and shared infrastructure around manufacturing intelligence and communications.

Networked Regional Centers in CA, WA, NY, NC and TX Anchored in Los Angeles



SMLC Membership:

For a list of SMLC members, visit: <https://smartmanufacturingcoalition.org/membership-list>

What We Need:

Extensive local investment is required. Every federal dollar of investment must be matched (cash and in-kind).

Goal: 3:1 over the next 5-10 years.

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CESMII Value Propositions

- Demonstrate Smart Manufacturing in multiple energy intensive, clean energy industries, utilities and end-to-end applications that define clear pathways to scaling to benefit individual companies and industries
- Drive workforce development through advanced information technology in manufacturing
- Increase productivity and new market growth with scaled interoperability
- Improve energy productivity through scaled interfacing with energy systems and proven metrics
- Develop a robust, secure, open-access Smart Manufacturing Platform and Marketplace for industrial applications, tools and technologies
- Save energy and improve manufacturing productivity and yield with new sensor, software, hardware technologies
- Create a new customer-base for existing sensor, control and software manufacturers of all sizes



Dollars Making Sense

Across the U.S. manufacturing, clean energy impacts are expected to be:

- 10-20% reduction in the cost of production by optimizing energy use, energy productivity and overall manufacturing efficiencies
- 20-30% reduction in energy consumption/greenhouse gas emissions
- \$7B-15B per year energy cost savings
- Supply chain energy stream use and waste reduced by 20-50%
(extraction, production and waste account for 75% manufacturing carbon emissions)

Workforce Development:

The CESMII will leverage relevant existing public-private resources and institutions in critical mass to develop the workforce that today's manufacturing industry requires through establishing a technical education and workforce development program and R&D opportunities.

Cost Share Estimate Considerations

The institute target cost share is estimated at 33% State, 33% Industry and 33% DOE.

National Partners (to date):

Please note: *This list does not include our Industry Partners.*

American Institute of Chemical Engineers (AIChE)
American Society for Quality (ASQ)
Brazosport College
California Manufacturing Technology Consulting (CMTC)
California Network for Manufacturing Innovation
Carnegie Mellon University
Clemson University
Center for Advanced Energy Studies
Connecticut Center for Advanced Technologies
CSU-5
Electric Power Research Institute (EPRI)*
Idaho National Laboratory
Information Systems (IS) Associates in SoCal (45 companies & CIOs – led)
Jet Propulsion Laboratory
LA City College
LA n Sync (40+)
Lamar University
Lee College
Lawrence Livermore National Laboratory
Los Angeles Cleantech Incubator
Louisiana State University
Manufacturing Enterprise Solutions Association (MESA)
Missouri Sciences and Technology
MIT Energy Initiative
National Renewable Energy Laboratory
North Carolina State University
Oak Ridge National Laboratory
Pacific Northwest National Laboratory
Rensselaer Polytechnic Institute
Rochester Institute of Technology
Rutgers University
San Diego Super Computer (SDSC)
Savannah River National Laboratory
SME
Southwest Research Institute
Texas A&M Engineering Experiment Station
Texas A&M Engineering Extension Service
Texas A&M University Energy Institute
Texas A&M University System
Texas Manufacturing Assistance Center
The Ohio State University
Tulane University
University of Buffalo
University of California, Berkeley
University of California, Irvine
University of California, Los Angeles
University of Connecticut
University of Louisville
University of Tennessee
University of Texas at Austin
University of Texas at San Antonio
University of Virginia
USC
Virginia Polytechnic Institute and State University
Washington State University
West Virginia University Energy Institute
Worcester Polytechnic Institute