# FUSION INDUSTRY ASSOCIATION

## The Voice of a new Industry

The Fusion Industry Association is an international coalition of companies working to electrify the world with fusion - the unparalleled power of the stars. Energy from fusion will provide clean power for everyone that's safe, affordable, and limitless.

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# Why Fusion?

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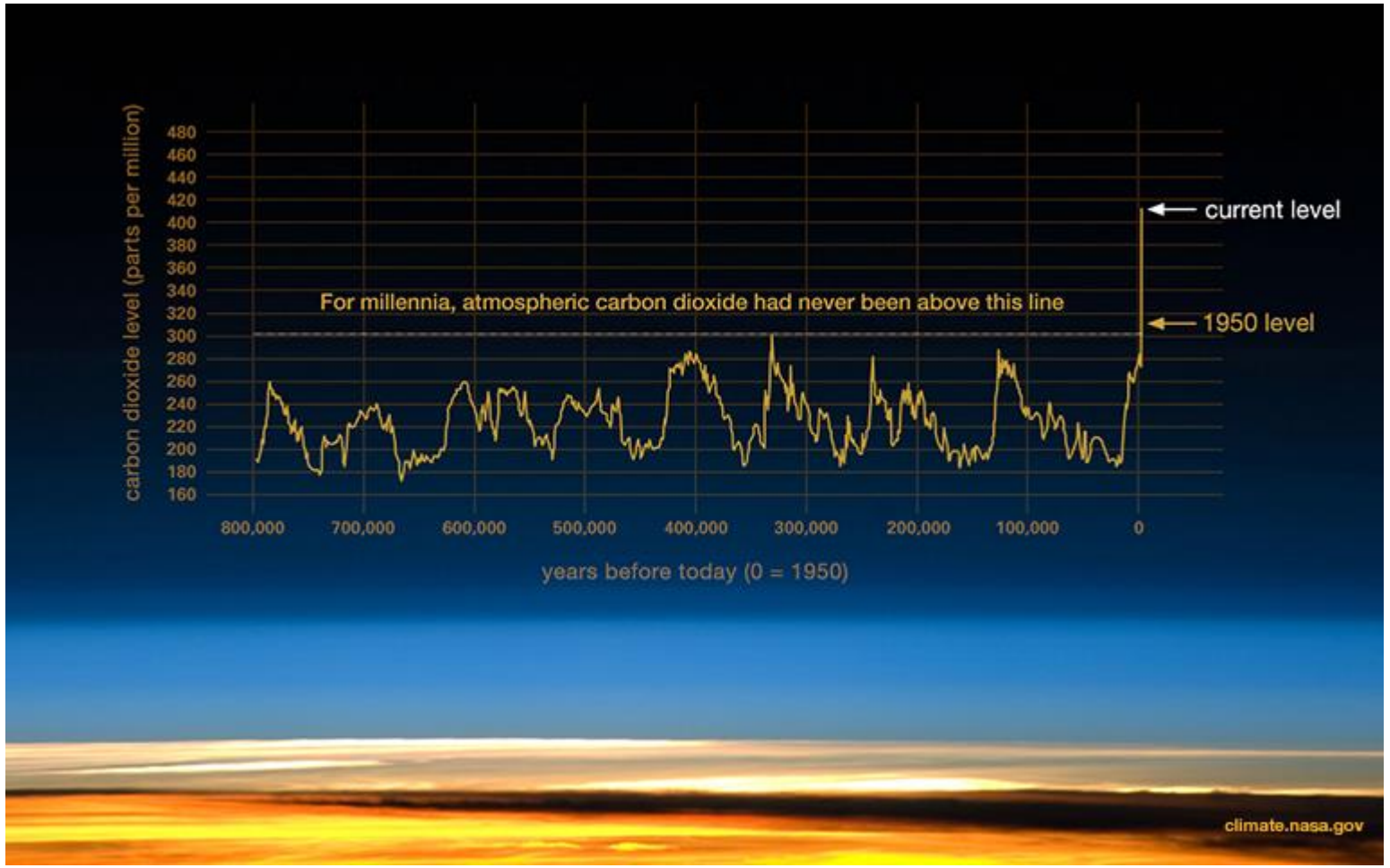
*To solve our generation's biggest challenge:*

## ***The Climate Crisis***

Current clean energy technologies will prove insufficient to reduce carbon emissions enough to solve climate change.

**Fusion is a breakthrough energy source uniquely suited for rapid, widespread adoption to disrupt and displace fossil fuels around the world.**



# Why Fusion?

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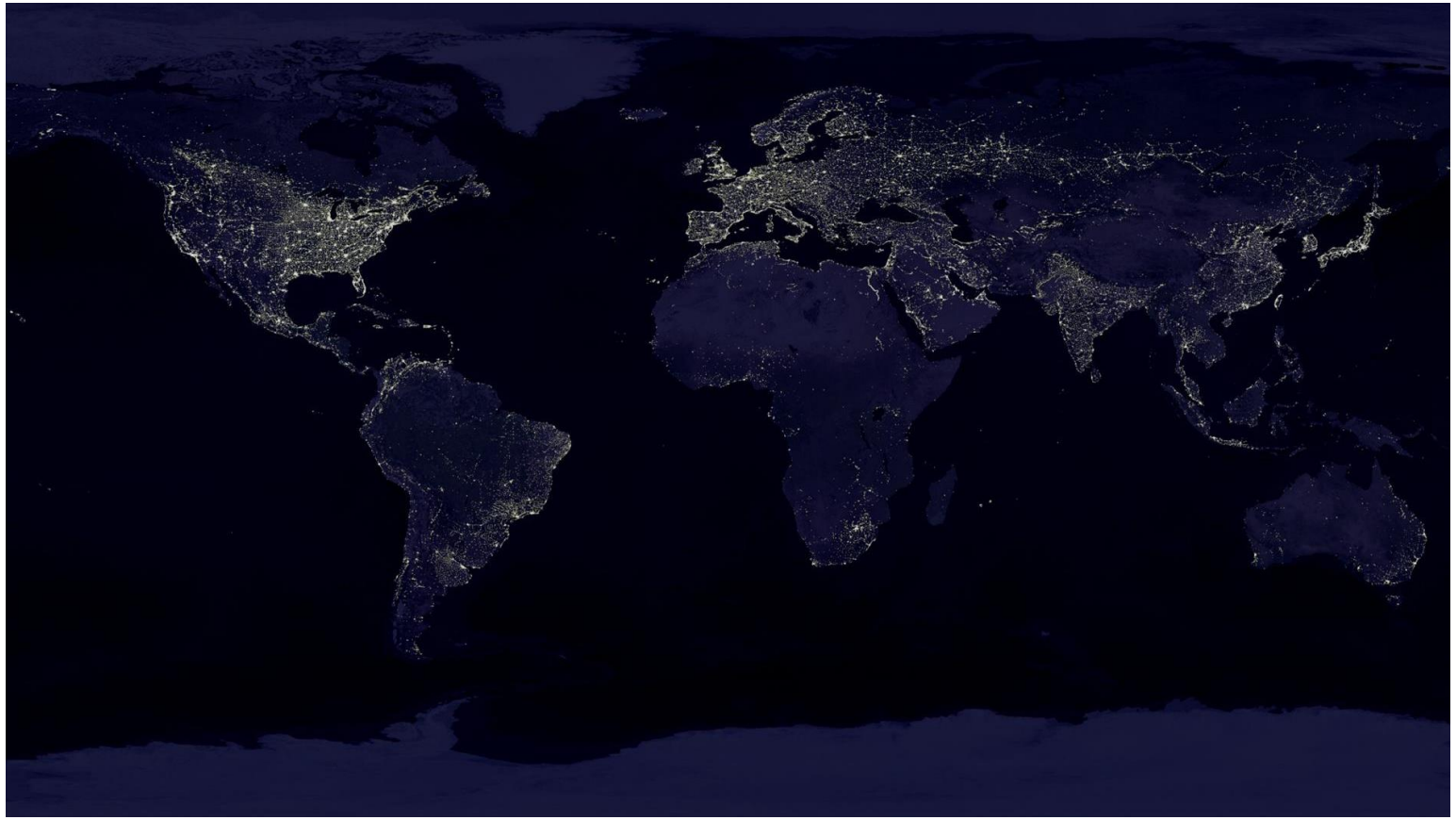
*To solve our species' biggest challenge:*

## ***Resource Scarcity***

Clean, safe, affordable, and inexhaustible fusion energy will power the economy of the future.

It will **raise living standards** and meet growing global energy demand without environmental sacrifices.

It will **break the geopolitics of energy**, so a country's destiny is not determine by the size of its hydrocarbon deposits.



# Why an Association?

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*Fusion energy will revolutionize the global energy system. It can solve the climate crisis and build energy abundance.*

- The Fusion Industry Association is **accelerating commercially viable fusion energy** by advocating for policies that support our 22 member companies as they develop commercial fusion power.
- The FIA **is building a movement** to tell the world should know how important clean, safe, affordable, and secure fusion will be to the future energy system. The FIA is educating key stakeholders in the private, public, and philanthropic sectors about the importance of tomorrow's fusion power economy.

*The FIA is expanding operations and accelerate efforts to support the transition to clean, safe, sustainable fusion energy.*

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*The Fusion Industry Association is the voice of the growing fusion industry. It supports efforts to **accelerate commercially viable fusion** research and development. The Association promotes the interests of the fusion industry around the world by advocating for ways to commercialize fusion power on a time-scale that matters.*

# FIA Team

**Andrew Holland,** *Executive Director*. Located in Washington, DC, Holland has worked at the intersections of science, energy, policy, and politics for two decades. He's the author of the "Fusion Power – A 10 Year Plan for American Energy Security," first published in 2013, laying out a roadmap for American leadership in fusion. Since creating the FIA in 2018, he has brought together 20 of the leading fusion companies to jointly coordinate on areas of common interest. He holds a MSc. in International Strategy and Economics from the University of St. Andrews and currently resides in Alexandria, VA.

**Dr. Melanie Windridge,** *Director, UK & Communications,* Dr. Melanie Windridge is UK Director of the Fusion Industry Association, responsible for Communications. A physicist and communicator with expertise in energy and new technology, she holds a PhD in plasma physics/fusion energy from Imperial College London and is Communications Consultant for UK fusion company Tokamak Energy. She has over a decade of experience in promoting a better understanding of science through writing, public lectures, video and audio channels. Melanie is an award-winning science writer, author of Star Chambers: The Race for Fusion Power and Aurora: In Search of the Northern Lights.

**Dr. Ryan Umstattd,** *Director, Tech-to-Market* served as the Acting Deputy Director for Commercialization at the Advanced Research Projects Agency-Energy (ARPA-E) where he was responsible for oversight of all Technology-to-Market activities. Prior to that, he was a Senior Commercialization Advisor where he helped prepare alternative fusion energy technologies for transition from government towards private sponsorship. Prior to joining ARPA-E, Ryan served in the Air Force as a scientist, professor, R&D program manager, and technology acquisition officer where he gained firsthand knowledge of many facets of delivering new technologies. Dr. Umstattd earned a PhD in Applied Science (Plasma Physics) at the University of California, Davis. He holds a B.S. in Physics from Santa Clara University.

# Membership

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# Affiliate Members



















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# How does the Fusion Industry Association advance fusion?

*Three strategic priorities for accelerating fusion energy*

# FIA Strategy

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**1. Partnering with Governments**

The private sector should have access to the scientific research that governments have pursued for decades. *Public-Private Partnerships* that include government support to private fusion companies can rapidly accelerate fusion development by driving private financial support.

**2. Building a Fusion Movement**

The world should know how important clean, safe, affordable, and secure fusion will be to the future energy system. FIA is educating key stakeholders in the private, public, and philanthropic sectors about the importance of tomorrow's fusion power economy.

**3. Ensuring Regulatory Certainty**

Fusion research, development, and deployment should be subject to appropriate, risk-informed regulation when experiments are built and sited.

# Ongoing Activities:
# *1. Partner with Governments*

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## Proposal: Department of Energy Voucher Program

*Create a new initiative in DoE that would allow private companies to apply for vouchers to spend at national labs.*

*This would enable companies to work directly with government scientists, a process that is currently cumbersome, difficult, and sometimes prohibited.*

STATUS:

**IMPLEMENTED**

- INFUSE Program More than $3 million in awards given in two tranches through July 2020.

**GROWING**

- $1m in FY2019, growing to $4 million FY2020, and Congressional plans for $5 million in FY2021.

## Proposal: Government Cost-Share with Private Fusion

*Modeled on the successful NASA COTS and DOE SMR cost-share programs, this new program would directly reimburse private companies for the development of new US-based fusion capabilities over a 5-year period.*

*Government dollars would be leveraged with at least a 50% private sector cost share. Payments would be based on performance*

STATUS:

**AWAITING ACTION BY CONGRESS AND DoE**

- Plan is a 5-year, $450 million program
- Legislation is drafted for introduction
- Support from highest levels of DoE
- Working with Congress to initiate in late 2020

# Ongoing Activities:
## *2. Building a Fusion Movement*

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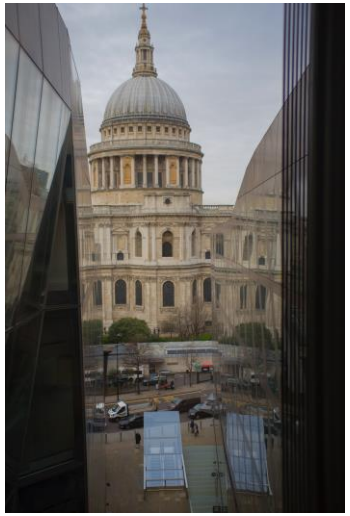
- **Fusion Investors Series**
  - Worldwide series of events aimed at bringing fusion experts together with possible investors in an informal forum
  - Purpose: share exciting progress in private fusion development, learn from investors and energize new advocates for fusion power
  - Successful events thus far:
    - Palo Alto, February 2019
    - New York, June 2019
    - London, March 2020
- **Social and Earned Media**
  - Growing presence throughout social media
  - Sustained interest from traditional newspapers



# Ongoing Activities:
# *3. Ensure Regulatory Certainty*

- Working with the US Nuclear Regulatory Commission to educate about appropriate regulatory activity.
- Publishing and convening legal experts to determine the proper posture for regulatory action.
- Working with the IAEA to inform a global fusion regulatory structure.

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## Building a Regulatory Framework to Support the Fusion Revolution in America

Fusion reactions smash together light atoms, releasing an enormous amount of energy: fusion is approximately 4 million times more energy dense than traditional fossil fuels. Numerous start-up companies funded by investment capital are exploring methods to commercialize fusion energy. The United States must act quickly to develop the fusion energy sector by calibrating its regulatory approach to fusion with fusion's low risks to health, safety, security, and the environment.

***How Is Fusion Energy Different from Existing Nuclear Fission Power Plants?*** In contrast to fusion, fission reactions used in existing nuclear power plants split apart heavy atomic nuclei, producing some highly radioactive materials that need to be cooled and stored for long periods of time as they decay to more stable, less toxic, substances. Fusion has numerous advantages over fission, including:

| | |
|---|---|
| Fusion power plants will have no risk of melting down and will create a minimal safety risk to the public. | Fusion power plants' risk levels would be comparable to or lower than existing fossil fuel power plants. |
| Fusion power plants planned by private developers will not use any "special nuclear material" or "source material." | Fusion devices will not produce any long-lived highly radioactive waste that needs to be cooled and monitored. |
| Fuel for fusion is virtually inexhaustible and can be extracted from sea water | Fusion power plants will create negligible risks for proliferation. |

***How Can U.S. Regulators Enable the Growing Private Fusion Energy Sector?*** The U.S. should continue the current use of performance-based and risk-informed regulations, building on decades of work evaluating domestic experimental fusion energy projects and using experience from other segments of the U.S. nuclear industry. Congress, the U.S. Department of Energy ("DOE"), and the Nuclear Regulatory Commission ("NRC") can take the following actions to build a domestic private fusion sector that can compete with other countries' substantial investments in fusion:

**Establish a broad legislative and regulatory framework that explicitly and permanently removes fusion energy from the regulatory approaches that the federal government has taken towards fission power plants.**

- The NRC's Part 50, 52 and proposed 53 regulations for large commercial fission reactors address a different suite of risks compared to risks that fusion facilities could create and therefore are not appropriate for fusion systems.
- Rules like the NRC's Part 20 regulations for general radiation protection and Part 30 rules for handling byproduct material would properly address fusion facilities' risk profiles.
- The DOE has created a framework for safe construction and operation of experimental fusion energy devices that has worked well for decades.

# Classes of Membership

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## www.FusionIndustryAssociation.org

### Membership

Full Membership in the Fusion Industry Association is open to **private companies striving to develop economically viable commercial fusion power** as soon as possible. The Membership is led by the **Fusion Advisory Committee**, composed of the companies at the "SUSTAIN" level of Membership.

### Affiliate Membership

Available to companies and individuals who want to participate in the FIA and be a part of the growing **fusion energy economy**.

### Educational and Research Partnerships

Open to universities, national labs, and scientific institutions who will partner with the fusion industry to advance fusion power.

### Corporate and Philanthropic Partnerships

Companies and charities can give tax-deductible support to the FIA, and is necessary to accelerate action in all lines of effort. Partner organizations receive preferred access to fusion members, insider information on capital raises, and only with greater resources can the FIA expand its reach.

*For more information, email Andrew Holland, Director of the FIA at: aholland@FusionIndustryAssociation.org*

# Legal Status

FUSION INDUSTRY ASSOCIATION

- *The Fusion Industry Association is affiliated with the American Security Project, a registered 501(c)3 educational nonprofit, and the American Security Action Fund, a registered 501(c)4 social welfare organization that can lobby the government in favor of policies, appropriations, or legislation. The Association does not intervene in political campaigns nor does it support candidates for public office.*
- *Donations to the 501(c)3 are exempt from American taxes, but will not be used to support lobbying expenses. Donations to the 501(c)4 are not exempt from taxes.*