

# Julio Friedmann

## **Position/Department/Division/Institution/Organization**

Distinguished Associates, Energy Futures Initiative

## **Country**

USA

## **Career history**

Leadership in global strategy and vision in clean-energy technology RD&D and analysis.

Record of accomplishment and strong management in government, academia, and industry.

Strong relationships in the research, industrial, financial, and policy communities in the U.S.

International leadership in clean energy & climate (specialty in China, Australia & Middle East).

## **PROFESSIONAL EXPERIENCE**

### **CEO and President, (2017-pres) Carbon Wrangler, LLC**

New company dedicated to helping others achieve deep decarbonization through application of advanced technology, practice, and project execution.

### **Senior Advisor for Energy Innovation (2016-pres) Lawrence Livermore Natl. Laboratory**

New position in Lab Director's Office: to develop and execute strategy around LLNL's entire clean energy and environment enterprise (special focus on DOE's new \$4.8B Mission Innovation effort).

### **Director, US-India Lab Upgradation Initiative (2016-2017) US D.O.E.**

New DOE position (Office of International Affairs, under an agreement between US DOE and India's new Ministry of Power, Mines, New Energy, and Coal): At India's request, leads an effort to dramatically improve India's R&D enterprise through bilateral collaboration with US R&D institutions modeled on US National Lab design, operations, and partnerships. Work as a special government employee.

### **Principal Deputy Asst. Secretary (2014-2016) Office of Fossil Energy (FE), U.S. DOE**

Planned, budgeted and executed ~\$630M fossil energy R&D program: grew budget >\$150M in

*Innovation for Cool Earth Forum (ICEF)*

*5th Annual Meeting*

*October 10-11, 2018*

*Hotel Chinzanso Tokyo, Japan*

3 years.

Managed team of >130 technical and administrative staff, including the Strategic Petroleum Reserve.

Provided direction and oversight to National Energy Technology Lab (~500 staff; \$1B budget).

Liaised with White House, Congress, and other federal agencies on RD&D and energy issues, including policy support and development for science, technology, and finance of clean energy and climate.

Led successful efforts to kick-start large-scale CCUS efforts in the US, China, and other countries.

Expert on China energy system, companies, policy, and government functions.

Served on executive committee and support RD&D across the >\$6 billion Office of Science and Energy, including cross-cutting effort on energy-water, subsurface science, and advanced materials.

Advised the Secretary and Deputy Secretary of Energy on technology, science, policy and international affairs related to clean energy technology, energy infrastructure, and climate change.

### **Deputy Asst. Secretary for Clean Coal and Carbon Management (2013-2014), U.S. DOE**

Planned and executed ~\$400M energy research program across FE: successfully grew budget >\$80M.

Managed team of ~30 technical and administrative staff, including budget process.

Liaised with White House, Congress, and other federal agencies on RD&D and energy issues, including policy support and development for science, technology, and finance of clean energy.

Led successful efforts to develop new RD&D programs, including \$130M subsurface science initiative.

Coordinated and partnered with Offices of Energy Efficiency & Renewable Energy and Nuclear Energy.

Served on executive steering committee for the >\$6 billion Office of Science and Energy.

### **Chief Energy Technologist (2011-2013) Lawrence Livermore Natl. Lab, Livermore, CA**

Coordinated and managed the ~\$60M energy research program across LLNL.

Served as primary business, governmental, and media interface on energy issues.

Co-Led a successful \$150M initiative in smart grid tech. development and deployment with CA

utilities.

Helping lead new programs in shale gas, renewable integration, and advanced computing for energy.

**Director, Carbon Management Program (2003 – 2011) LLNL, Livermore, CA**

Built a >\$15 million dollar research program in 5 years.

Engaged LLNL in five commercial CCS projects (Weyburn, In Salah, Snohvit, Shenhua, Cranfield)

Managed research staff of >40 investigators

Technical Leader, US-China Clean Energy Research Center (CERC) for Coal and CCUS

**Assistant Research Scientist (2001-2004) University of Maryland, College Park**

Award: Best Lecturer, 2003

**Sr. Research Geol. (1998-2000) ExxonMobil Upstream Research Co., Houston**

**Research Geologist (1996-1998) Exxon Production Research Co., Houston**

Active Clearance Level: Q-SCI

Research Experience:

Carbon Capture and Storage (CCS), Direct Air Capture (DAC) and Carbon-to-value (CO<sub>2</sub> Use)

Advanced power cycles and energy conversion

Shale gas and tight hydrocarbon science, technology development and practice

Application of advanced supercomputing to energy science and technology development

Energy systems analysis

Smart grid design, planning and operations, including renewable integration

Chinese energy systems, conversion, and networks

Geology and geophysics (emphasis on stratigraphy and geomechanics)

Oil and Natural Gas Exploration/Production Experience: Venezuela, Nigeria (Deepwater), Gulf of Mexico, North Sea (U.K. & Norway), Congo Basin, Angola/S.Angola (Deepwater)

Other relevant experience:

Co-director, US-China Clean Energy Research Center (Adv. Coal Technology Consortium)

Short course development and direction: Shale Gas exploration, production, and technology

## **EDUCATION**

**Ph.D. Univ. of Southern California (1995)**

Dissertation: Shadow Valley basin, eastern Mojave Desert, California: Structural and stratigraphic evolution of a supradetachment basin & its implications for extensional tectonics

**M.S. Massachusetts Institute of Technology (1990)**

**B.S. Massachusetts Institute of Technology (1988)**

## **Awards/Publications**

**Greenman Award (IEA): Significant contributions for CO<sub>2</sub> removal, storage, and utilization (2016)**

## **MAJOR PUBLIC PRESENTATIONS (selected list, 2010-2018)**

**Session Chair:** IEA World Energy Investment Summit, Paris (3-2018)

**Speaker:** Aspen Institute Energy Fora, (2016-2018)

**Speaker:** GLOBE Forum, Vancouver, BC (3-2018)

**Keynote:** Southern States Energy Board Ann. Meeting: Rogers, AK & Mobile, AL, (2016 & 2014)

**Keynote:** Swiss Economic Forum, Bern, Switzerland, Sept. 2016

**Speaker:** Precourt Vail Global Energy Forum, Vail, CO Jan. 2016

**Keynote:** 12th and 14th Annual CCUS Conf., Pittsburgh, PA (2014) and Washington, D.C. (2016)

**Session Chairs:** World Future Energy Summit: Abu Dhabi, UAE, Jan. 2016 and 2015

**Keynote:** Future of Fossil Energy in the US and Abroad: CSIS, Dec. 2014

**Keynote:** 12th Greenhouse Gas Technology Conference: Austin, TX, Oct. 2014

**Keynote:** 1st and 2nd US-China Clean Coal Industrial Fora, Sept. 2015 (Taiyuan) and 2016 (Billings)

**Co-Chairman and keynote:** over 15 clean energy conferences in China 2010-2015

**Congressional testimony,** Senate Committee on Environment & Public Works, March. 2018

**Congressional testimony,** Senate Committee on Environment & Public Works, Nov. 2017

**Congressional testimony,** House Committee on Appropriations, oversight sub-committee, Feb. 2014

## **BOARDS, COMMERCIAL TECHNICAL ADVISORY (subset, 2007-2018)**

**Advisory Board**, NET Power, 2018

**Senior Fellow**, Breakthrough Institute, 2018

**Distinguished Associate**: Energy Futures Initiative, 2017

**Senior Advisor, Global CCS Institute**, 2016-2018

**Advisory Board for CCS**, Total SA, 2016-2018

**Minorities in Energy (Champion)**: 2014-16

**Gamechanger initiative (MIT-Stanford: G. Schultz and E. Moniz, Chairs)**,  
2012-2013

**Member, National Coal Council (advisory group to US Sect. of Energy)** 2012-2013.

**Co-director, US-China Clean Energy Research Center, Adv. Coal Tech.**

**Consortium**, 2010-2013

**Programmatic Advisory Committee, RPSEA**, unconventional gas, 2007-2008

## **LEAD OR MAJOR CONTRIBUTOR, MAJOR PUBLICATIONS (2007-2015)**

**LEAD**, Advancing Large-Scale Carbon Management: Expansion of the 45Q Tax Credit, Policy Paper, Energy Future Initiative, May 2018

[https://static1.squarespace.com/static/58ec123cb3db2bd94e057628/t/5b0604f30e2e7287abb8f3c1/1527121150675/45Q\\_EFI\\_5.23.18.pdf](https://static1.squarespace.com/static/58ec123cb3db2bd94e057628/t/5b0604f30e2e7287abb8f3c1/1527121150675/45Q_EFI_5.23.18.pdf)

**Co-chair**, S&T Roadmap for the New Carbon Economy, (in review)

**Co-Chair**, Chapter 7 (Carbon removal), UN Environmental Program Emissions Gap Report, Nov. 2017 [https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR\\_2017.pdf](https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf)

**Co-Lead**, Carbon Dioxide Utilization Roadmap 2.0, Innovation for a Cool Earth Forum, Oct. 2017 [https://www.icef-forum.org/platform/upload/CO2U\\_Roadmap\\_ICEF2017.pdf](https://www.icef-forum.org/platform/upload/CO2U_Roadmap_ICEF2017.pdf)

**LEAD**, Recovery of Rare Earth Elements from Coal and Coal Byproducts (NETL/DOE), in press.

**LEAD**, Roadmap for US-China Collaboration on Carbon Capture and Sequestration, Asia Society Press, 41p. [http://asiasociety.org/files/pdf/AS\\_CCS\\_TaskForceReport.pdf](http://asiasociety.org/files/pdf/AS_CCS_TaskForceReport.pdf)

**Major contributor**, “The Future of Coal Energy”, MIT Study, 2007