

Amory B. Lovins (1947– ), SAE, is cofounder and Chairman Emeritus and until September 2019 was Chief Scientist of Rocky Mountain Institute ([www.rmi.org](http://www.rmi.org)), continuing as an independent contractor and Trustee. An American consultant physicist, he is a noted innovator in energy and its links with economy, environment, resources, security, and global development. He has advised the energy and other industries for 45+ years in 70+ countries, as well as the US Departments of Energy and Defense. His work has been recognized by the Volvo, Zayed, Blue Planet, Onassis, Shingo, Goff Smith, and Mitchell Prizes, the Benjamin Franklin, Happold, and Spencer Hutchens Medals, MacArthur and Ashoka Fellowships, 12 honorary doctorates, and the Right Livelihood (“Alternative Nobel”), Heinz, Lindbergh, *Time* Hero for the Planet, and National Design Awards. A Swedish engineering academician, US honorary architect, former Oxford don, and 2011–18 member of the National Petroleum Council, he has briefed 30+ heads of state, advised major firms and governments worldwide, taught at ten universities (most recently Stanford’s School of Engineering and the Naval Postgraduate School), and written 31 books and 650+ papers. In 2009, *Time* named him one of the 100 most influential people in the world; *Foreign Policy*, one of the 100 top global thinkers. In 2016, the President of Germany awarded him the Officer’s Cross of the Order of Merit (*Bundesverdienstkreuz 1. Klasse*).

Lovins’s 1991 invention of a highly integrated ultralight-hybrid Hypercar® concept won the 1993 Nissan Prize at ISATA and the 1999 and 2003 World Technology Awards. He has advised senior executives and development engineers at most of the world’s OEMs. The industry collectively committed some \$10 billion to that general line of development, and Lovins’s work reportedly helped to inspire and accelerate Japanese hybrid developments as well as the industry’s most important recent strategic trends—lightweighting and electrification. In 1997, Lovins was named by *Car* magazine the 22<sup>nd</sup> most powerful person in the global automotive industry. In 2007–09, he was the first of three members of the Transformation Advisory Council for the Executive Chairman of Ford Motor Company. In 2013, BMW and VW launched production of the kinds of carbon-composite electrified autos he had long advocated, the latter with technical specifications strikingly similar to those he published in the early 1990s. Many of the concepts he put in the public domain in the 1990s, from OnStar®-like services and wireless vehicle-software updates to vehicle-to-grid integration, are now in or entering the world market.

Lovins founded RMI’s Hypercar Center in 1992 and in 1999 spun it off into an independent for-profit technology development firm, Hypercar, Inc. In 2000, with two Tier One suppliers, the firm developed an uncompromised, competitively manufacturable [virtual design](#) for a 114-mpg fuel-cell midsize SUV; as a gasoline hybrid with a two-year US or one-year EU payback, it could achieve 67 mpg on the road. In 2003, at OEMs’ and Tier Ones’ request, the firm developed a manufacturing process for cost-competitive ultralight carbon-fiber structures. Renamed Fiberforge Corporation in 2004, and chaired by Lovins until 2007, the firm validated and commercialized its patented midvolume process by selling manufacturing equipment, licenses, samples, pilot runs, and development services to automotive, aerospace, military, and other customers. Its technology, offering distinctive advantages over those of ~16 global competitors, was sold in 2013 to Tier One pressmaker Dieffenbacher with a view to scaling it aggressively in global markets, delivering 1–2-minute cycle times with complex 2×2m parts.

In 2008, RMI spun off Bright Automotive, Inc. with Alcoa, JCI, Turner Foundation, and Google. In April 2009, Bright showed a driving prototype of the resulting aluminum-intensive IDEA plug-in-hybrid commercial fleet van, getting ~80 mpg (city). It needed no subsidy to make a strong business case to fleet buyers, because its 1-ton lower mass and its lower drag and rolling resistance eliminated most of its costly batteries. In July 2010, Bright announced a unique strategic partnership with General Motors and won GM’s first venture investment. However, in February 2012—despite a well-driving prototype, the best team of any automotive startup, ample customer commitments, a full supply chain and manufacturing setup, and a strong business case—Bright was forced to cease operations after 3.2 years of inconclusive due diligence by the U.S. Department of Energy for production capital.

Besides leading automotive innovation for a quarter-century, Lovins has also been involved in ship, truck, and a little airplane design, including co-leading the energy design of the world’s most efficient superyacht and an assessment for the Secretary of the Navy of retrofits to save roughly half the Navy’s hotel-load energy, updated in 2019 with a Naval charrette on a new superefficient surface combatant. In 2013–14 he served on the Chief of Naval Operations’ Advisory Board. He helped launch two major truck-efficiency efforts and the [military revolution](#) in energy efficiency; keynoted industry’s 2019 sustainable-aviation summit; launched major energy initiatives with the governments of China and India; and is an analyst and consultant in superefficient design in industry and buildings, working mainly with the private sector. He continues to advise OEMs in several countries and to support RMI’s Mobility team, which now focuses on the transition to shareable, autonomous, mobility-as-a-service, lightweight, electrified vehicles. He also leads RMI’s integrative design initiative, which aims to reform engineering practice and pedagogy to achieve radical energy and resource efficiency at lower capital cost through integrative design. His latest (2019) paper on its automotive application is in review at SAE’s *J-STEER* journal, of which he is an Associate Editor.