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Tapping Into Solar Energy Can Boost Iowa's Economy and Combat Climate Change

Iowa is experiencing the effects of a changing climate. This summer the state endured record-high temperatures and dangerous air quality from wildfires. The **Iowa Climate Statement,** endorsed by 221 Iowa science faculty at 36 college and universities across the state, was released Tuesday and highlights how harnessing solar energy can boost the state's economy and help mitigate the effects of climate change.

"With climate-related heat and damage both across Iowa and nationwide this summer, the need to phase out fossil fuels is clear," said **Gene Takle**, emeritus professor of agronomy at Iowa State University. "Avoiding the future costs of climate change means accelerating our path to carbon-free energy production," continued Takle.

A transition to solar can contribute to a carbon-free energy economy, according to more than 200 Iowa scientists who signed the 2023 climate statement. In recent years, a combination of factors has helped to drive down the cost of solar. Technological breakthroughs have made solar panels more efficient at converting sunlight to electricity.

"The price of solar panels has fallen to just a tenth of what they cost 20 years ago," said **Dave Courard-Hauri**, professor of environmental science and sustainability at Drake University. "The cost of new solar energy is often below the cost of energy from existing fossil-fuel plants."

Solar is sustainable, affordable, and more efficient than some other energy sources, according to the climate statement. In comparison to ethanol, solar requires far less land to produce energy. Solar is also compatible with other land uses, including "agrivoltaics" – a combination of agriculture and solar on the same land – as well as existing infrastructure, such as rooftops and parking lots.

"Solar energy is efficient and practical, producing 100 times more energy per acre than ethanol," said **Peter Thorne**, professor of occupational and environmental health at the University of Iowa. "With the rise of agrivoltaics, we are finding that solar fields are even conducive to mixed uses."

Innovative design has demonstrated how solar can be utilized on an individual level. Greater investment in solar can promote local economies and encourage more innovation at home.

"Solar will benefit communities by providing skilled, local construction jobs and potential energy security with micro-grids," said **Ulrike Passe,** professor of architecture at Iowa State University. "In 2009, Iowa State students designed and built the Interlock House at Honey Creek State Park, a great example of how easy it is to create net-zero or near net-zero solar homes here in Iowa."

Solar complements existing renewable energy technologies such as wind, the Iowa Climate Statement states, noting additional geographically-distributed solar capacity will help balance the state's energy portfolio.

"Iowa's wind energy resources are maximized in winter and early spring, while solar energy is maximized in late spring and summer when wind is low," said Takle. "A strategic and balanced combination of utility-scale wind and solar energy will enhance Iowa's year-round capacity to produce renewable energy, with reduced dependence on outside sources," continued Takle.

Rapidly changing climate conditions have highlighted the need for action. Harnessing the potential of solar in Iowa can advance renewable energy across the state and strengthen Iowa's position as a clean-energy leader.

"For several years, we have been lauding the progress of Iowa in advancing renewable wind energy," said **Jerry Schnoor**, co-director of the UI Center for Global and Regional Environmental Research. "The missing piece has been solar energy and the beautiful fit that it makes with wind for a resilient sustainable energy infrastructure."

Iowans have several ways to benefit from solar, and many policies in place to aid this investment. Policy initiatives, including expanded tax credits and new funding opportunities, have created economies of scale that make solar more affordable.

"With federal subsidies to speed the transition, there has never been a better time for people and utilities to invest in solar," continued Courard-Hauri.

The thirteenth annual **Iowa Climate Statement** was endorsed by 221 Iowa science faculty at 36 college and universities across the state.

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Credits:

The lead authors of the **Iowa Climate Statement 2023: It's Time to Tap Iowa's Vast Solar Energy Resources** include: Dave Courard-Hauri, Professor of Environmental Science and Sustainability , Drake University; Ulrike Passe, Professor, Architecture, Iowa State University; Jerry Schnoor, Co-director, UI Center for Global and Regional Environmental Research; Gene Takle, Emeritus Professor of Agronomy, Iowa State University; and Peter Thorne, Professor, Occupational and Environmental Health, University of Iowa