

**FOR IMMEDIATE RELEASE**

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**Colorado Energy Water Consortium Obtains \$1.4 million DOE Grant to Improve Water Management during Shale Oil and Gas Production**

**Editor's note:** Photos of Professor Ken Carlson and Tom Bradley are available with the news release at <http://www.news.colostate.edu>.

**FORT COLLINS** – Colorado State University announced today that Dr. Ken Carlson, a civil engineering professor at Colorado State University, will work with Noble Energy, Inc. on a new \$1.4 million U.S. Department of Energy grant to optimize water management associated with Noble's oil and gas production in the Denver-Julesburg Basin in Weld County.

The two-year project, awarded through DOE's Research Partnership for Sustainable Energy in America, aims to assess and improve water acquisition, transportation and disposal.

Dr. Carlson and his partners will work to develop computer modeling and online training materials in partnership with industry. Dr. Carlson expects that the project will also benefit communities by reducing truck traffic, air emissions and use of water resources. The study will develop tools that will assist industry in siting and designing water treatment plants that are an essential part of the drive to recycle oil and gas related wastewater.

"This is driven by efficiency and if the industry's more efficient with water use, there's less risk of environmental impact," he said. "Another benefit of recycling is a reduction of stress on agriculture water and a reduced risk of regional water depletion."

Carlson notes, "Optimizing management of water during drilling and hydraulic fracturing could mitigate other environmental impacts including ecological degradation due to excessive truck traffic and the associated dust and land disturbance.

"There are 19,000 active wells in Weld County and most produce some water. Do we have 100 water treatment plants? Do we have one? Is it better to use some water for reuse in industry and other for agriculture? The study will develop industry targeted geographic information system (GIS) based tools that can be used to assess the logistics of water use, transportation, reuse and disposal".

"This is the kind of public-private partnership that we support in Weld County where we have to balance the economic benefits of industry with environmental impacts on our communities," said Weld County Commissioner Barbara Kirkmeyer. "We look forward to the results of Dr. Carlson's research."

"Our corporate purpose is Energizing the World, Bettering People's Lives," said Ted Brown, Senior Vice President – Northern Region of Noble Energy. "As we continue to increase activity in the DJ Basin, we seek solutions to maximize efficiencies while minimizing impacts. Our ongoing partnership with CSU is key in achieving this goal, and living up to that corporate purpose."

"Working together with environmental groups, industry leaders and scientists, Colorado State can act as an objective third-party to understand the complexities of the energy industry and communicate those complicated issues to the general public," Carlson said. "We hope this collaboration will provide a unique opportunity to

protect Colorado's water resources while also enabling economic growth from the boom in oil and gas development in the region.”

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Kirkmeyer is the Chair and Carlson is the co-director of the Colorado Energy Water Consortium, a partnership in northern Colorado that includes government, industry, environmental groups, agricultural interests and CSU leaders working together to solve water issues associated with oil and gas drilling development including hydraulic fracturing.

Carlson is an expert on water management associated with oil and gas drilling and pollutants that can affect drinking water supplies. Also collaborating on the DOE study from CSU are Dr. Tom Bradley, an assistant professor of mechanical engineering who is an expert in systems management, and Dr. Kimberly Catton, a research scientist in civil engineering with extensive GIS experience.

Noble Energy is a leading independent energy company engaged in worldwide oil and gas exploration and production. The Company has core operations onshore in the U.S., primarily in the DJ Basin and Marcellus Shale, in the deepwater Gulf of Mexico, offshore Eastern Mediterranean, and offshore West Africa. Noble Energy is listed on the New York Stock Exchange and is traded under the ticker symbol NBL. Further information is available at [www.nobleenergyinc.com](http://www.nobleenergyinc.com).