

**Metadata Records**  
**Irrigation Innovation Consortium-Supported Project Datasets and Information Products**

Please use a separate sheet for each dataset. Answers are automatically saved.  
 Questions? Contact Diane DeJong: [diane.de\\_jong@colostate.edu](mailto:diane.de_jong@colostate.edu).

Thank you!

Question	Answer
<b>Project name</b>	Development of an irrigation and pumping plant efficiency tool
<b>Project background</b>	<p>Background: The largest cost in operating an irrigation system is energy. The main calculation in determining energy requirements in pumping is dynamic head, which describes the relationship between water and energy in a pumping system. The goal of this project was to develop a calculator tool to help agricultural irrigators make informed decisions on maintenance and upgrades to improve profitability in center pivot irrigation systems.</p> <p>Outcome: The team developed a calculator using Excel that compares the current costs of operating a center pivot irrigation system to potential savings. The calculator evaluates pumping and operating in irrigation systems, as well as key conditions in a center pivot. Audits and training on the calculator was given in 2020. During audits, the team found potential energy savings from 1-27%. The team was also able to identify specific issues effecting energy use including flow meter accuracy voltage/amp imbalance, and low pressure affecting uniformity.</p>
<b>Dataset name</b>	Five irrigation audits
<b>Primary author</b> Include first & last name, institution affiliation, and email address.	Joel Schneekloth, Colorado State University, <a href="mailto:joel,schneekloth@colostate.edu">joel,schneekloth@colostate.edu</a>
<b>Primary contact</b> The primary contact may be the same or different from the primary author. Include first & last name, institution affiliation, and email address.	Joel Schneekloth, Colorado State University, <a href="mailto:joel,schneekloth@colostate.edu">joel,schneekloth@colostate.edu</a>
<b>Dataset description</b> Please provide a brief, clear summary description of the dataset contents. Indicate as applicable: purpose and scope; time period; areas of investigation; and any other special characteristics.	Five irrigation audits were completed between May and June 2019 by Lee Wheeler and his team. Irrigation systems included center pivots and sub-surface drip irrigation systems; crops included corn, soybeans, barley, grain, pistachio, and cotton; pump sizes included 75 HP submersible - 150 HP VHS; static water levels ranged from 170-319 feet; water HP ranged from 43-99 HP; motor HP ranged from 71-152 HP; overall efficiency ranged from 85-113 % of Nebraska Pumping Plant Performance Criteria (NPPPC); operating ressurees ranged from 19-56 psi; irrigation system capacity ranged from 2-7.6 gpm/acre (1/10" – 4/10" in 24hr period)

<p><b>Spatial coverage</b> Please be specific as possible about the geographic coverage of your data, and record the information according to defined standards, such as FGDC or the Getty Thesaurus of Geographic Names. You can enter lat/long data, county names, state names, etc.</p>	Burlington, CO; Imperial, NE
<p><b>Temporal coverage</b> Describe the temporal coverage of your dataset: Start: Time of day, Date, Month, Year Finish: Time of day, Date, Month Year</p>	May - June 2019
<p><b>Re-use limitations</b> Describe known problems or caveats that would limit reuse of the data (e.g., uncertainty, sampling problems, blanks, quality control samples) and/or that future potential users of your dataset should know about. Or indicate "None."</p>	None
<p><b>Citations</b> Please include full citations and DOIs for articles published based on or related to this dataset. Or indicate "None."</p>	Irrigation Pumping Plant Calculator, Proceedings of the 32nd Annual Central Plains Irrigation Conference, Kearney, NE, Feb.18-19, 2020, <a href="https://www.ksre.k-state.edu/irrigate/oow/p20/SchneeklothPPC_20.pdf">https://www.ksre.k-state.edu/irrigate/oow/p20/SchneeklothPPC_20.pdf</a>
<p><b>Keywords</b> Please add a few appropriate National Agricultural Library keywords: <a href="https://agclass.nal.usda.gov/vocabularies/nalt">https://agclass.nal.usda.gov/vocabularies/nalt</a></p>	irrigation management; center pivot irrigation, subsurface drip irrigation; Energy; efficiency; pumping plant
<p><b>Tags</b> Please add a few of your own user-defined tags that would be useful to others who might use your dataset in the future.</p>	irrigation pumping plant; irrigation audit; irrigation efficiency; pumping plant
<p><b>Acronyms &amp; abbreviations</b> Please define any acronyms, site abbreviations, or other project specific designations used in your dataset. Or indicate "none."</p>	NPPPC: Nebraska Pumping Plant Performance Criteria; HP: horsepower; GPM: gallons per minute; VHS: vertical hollow shaft; WHP - Water Horsepower; BHP - Brake Horsepower; MHP- Motor Horsepower; TDH- Total Dynamic Head; GPM - Gallon per minute
<p><b>Other dataset storage location</b> Has this dataset already been uploaded elsewhere? Yes or No  Reasons may include a requirement as part of publishing a paper or storing data on GitHub or other locations to make accessible to others.  If yes, please provide the link or other information to explain where the dataset is located and where or how it can be accessed.</p>	No