

A large center pivot irrigation system is shown in operation over a green field. The system consists of a long metal wheel line supported by a central pivot point, with multiple arms extending outwards. Each arm has several wheels and is supported by a series of truss structures. Water is being sprayed from the end of the system, creating a misty atmosphere. The background shows rolling green hills under a cloudy sky.

Managing Water for Optimal Yields: Irrigation in North Dakota

North Dakota Irrigation Association

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Managing Water to Optimize Agriculture

- **Economic Impact of Irrigation:**
- 1 acre of irrigation=4 acres of dryland
- During drought:
- 1 acre of irrigation=6 acres of dryland
- **Working to update these numbers**
 - Opportunity for partnership



Irrigation supports....

- Growth of specialty crops
- Value-added processing
- Risk mitigation for a \$30B/year industry
- Economic contribution multiplies across the state.



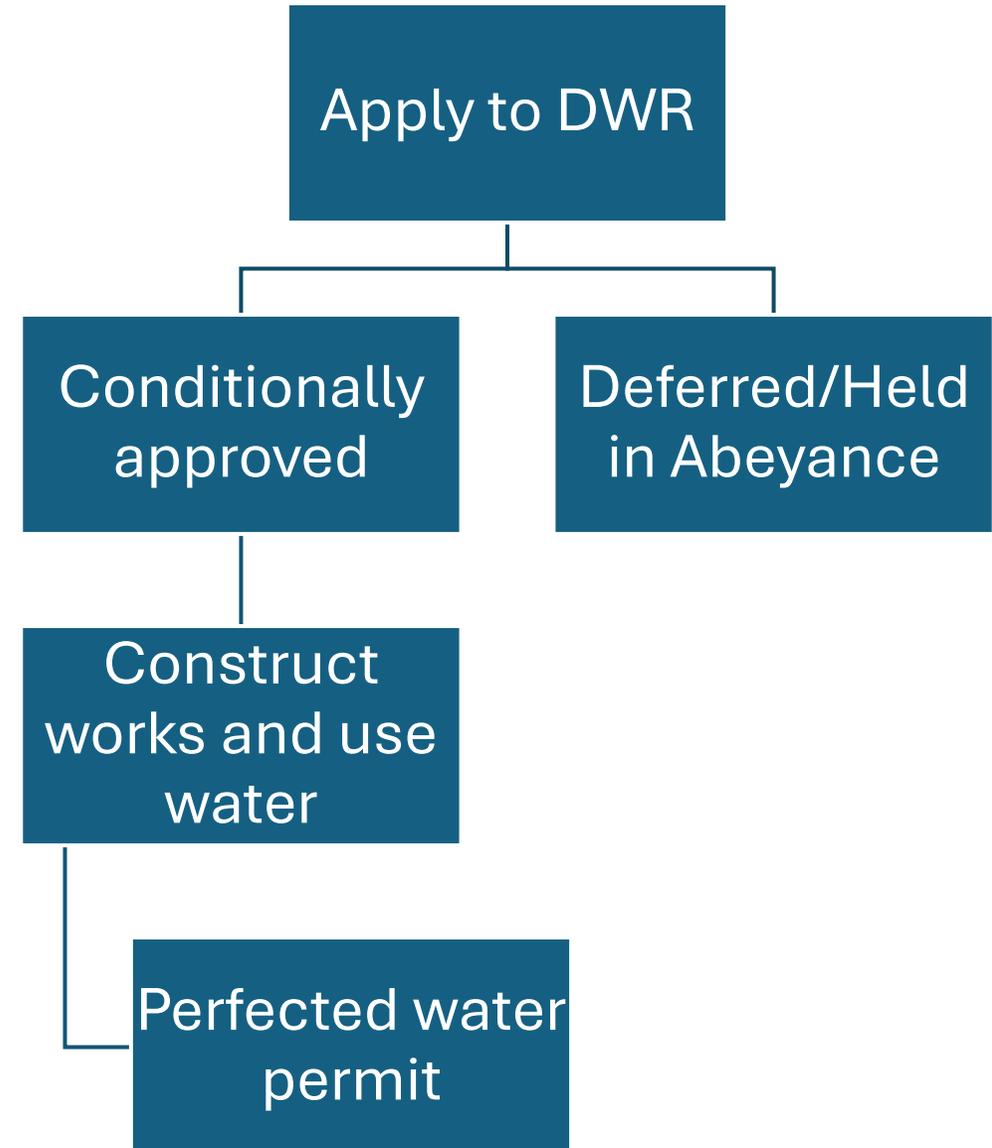


Types of Water Used for Irrigation

- Surface water
 - Rivers, lakes
 - Missouri River/McClusky Canal
- Groundwater
 - Aquifers
 - Highly competitive

Permitting process

- Western water law: Prior appropriation doctrine
- All water is permitted by the state—Department of Water Resources
- Timely review and processing of permits is a challenge





Types of Infrastructure Investment

- Underground:
 - Pipes
 - Pumps
 - Wells
- Above ground:
 - Pivots
 - Power

Costs

- Approx. \$150,000 for a 'base model' center pivot
 - Doesn't include all the infrastructure to use the pivot (e.g. pipe, well, electricity)
- 360Rain models run about \$250,000. This model can cover odd shaped fields and get water to field corners, but applies less water than a traditional pivot.
- Technology to increase water efficiency, like variable rate, are usually add-ons to a base model
- Costs vary considerably depending on the water source and the distance the water needs to move
- Costs also associated with development and preparation

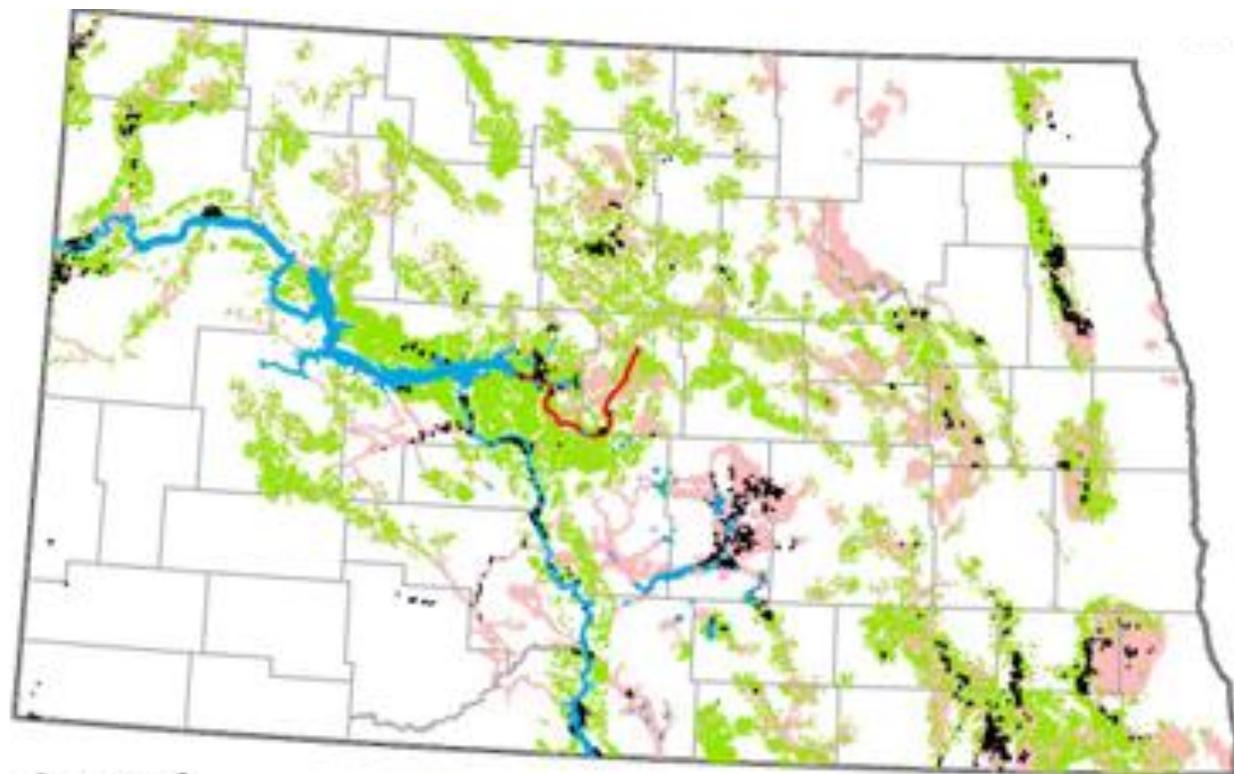


Irrigation Development

- Approx. 300,000 acres under irrigation
- Potential for as much as 1.52 million acres
- Limitations include water availability and financing



Water Availability



Legend

Identified center-pivot systems

Irrigation Potential

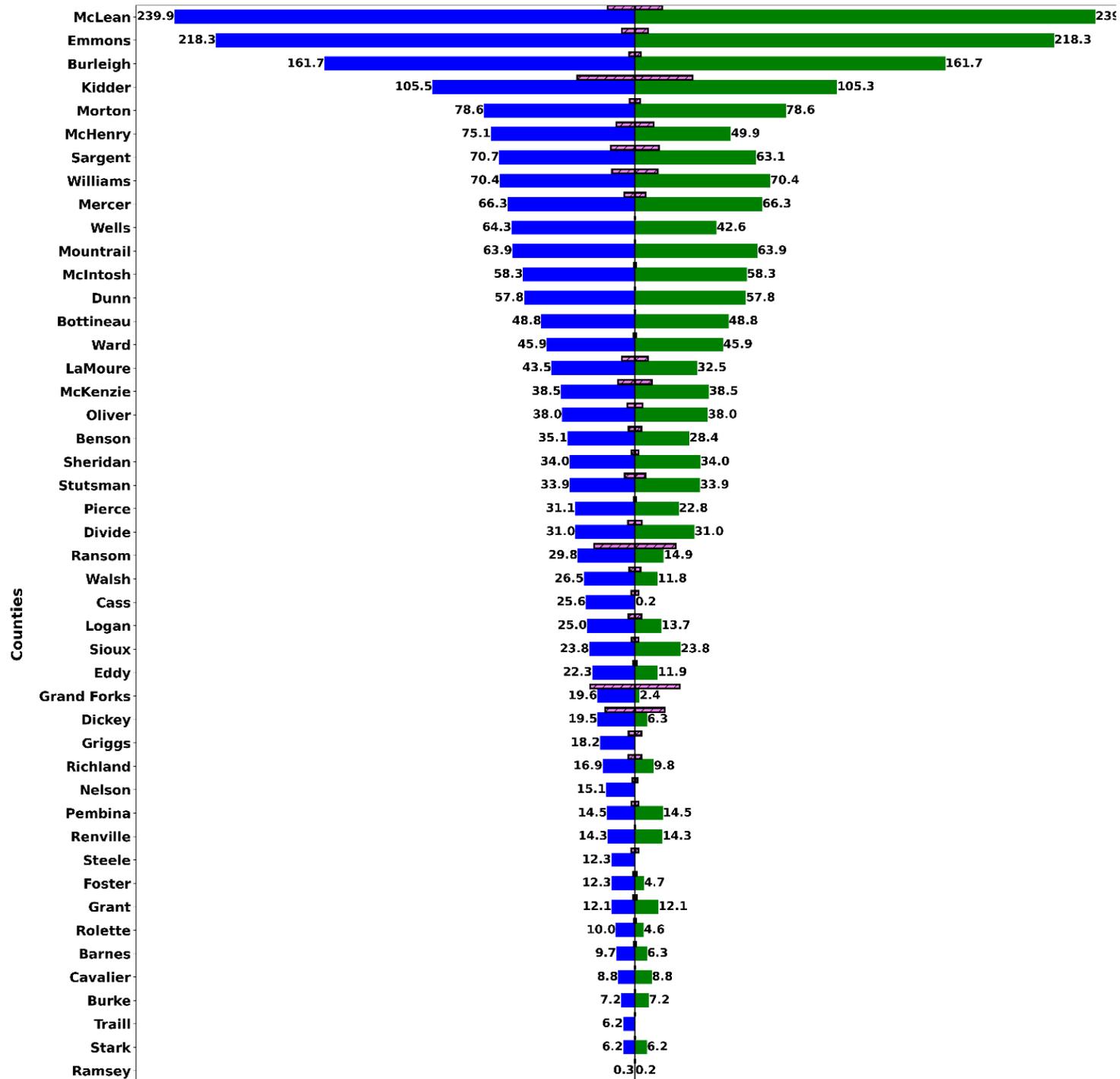
Aquifers with available water

Missouri River System

County Boundaries

ND State

McClusky Canal



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Financing

Some funding available from the state and federal government but most producers rely on traditional financing to install systems.

The federal government at times has supported cost share for upgrades in systems to achieve water savings.

The state provides cost share for installation of 'shared works' for irrigation districts.

The state also provides interest rate buydown for irrigators purchasing new systems.

- Up to 4%; lifetime cap of \$90,000

Challenges with traditional financing

- Unless a producer can use land as collateral, traditional loan terms are for at most 10 years (average probably closer to seven).
- This can be a barrier for new and beginning producers especially.
- Pivots have a lifespan of 30+ years and the underground equipment even longer.



A large center pivot irrigation system is shown watering a vast cornfield. The system's long metal arms extend across the field, with multiple wheels and nozzles. A central pivot point is visible, featuring a tall water tower. The scene is set at dusk or dawn, with a sky of soft blues and oranges. The corn plants in the foreground are lush and green.

Meeting the Challenge

- How can we collaborate to solve the financing challenge?
- Are there ways we can think outside the box to meet this need?

Thank you!

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