



CONSERVATION ENHANCEMENT ACTIVITY

E533C

CONSERVATION STEWARDSHIP PROGRAM

Install VFDs on pumping plants

CONSERVATION PRACTICE: 533 - Pumping Plant

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial); Pasture; Associated Ag Land; Farmstead

RESOURCE CONCERN: Energy

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Install Variable Frequency Drive(s) (VFD) on Pumping Plant with the correct sensors, on all pumps as indicated in the evaluation.

Criteria

- Implement recommendations for components from a pumping plant evaluation where the FVD is feasible, reduces energy use, and the existing or new electric drive unit will support the VFD.
- The replacement or retrofit system and related components or devices meet or exceed currently applicable federal, state, and local standards and guidelines.
- Components of this enhancement will meet the NRCS Conservation Practice Standard Pumping Plant (Code 533).



Documentation and Implementation Requirements

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Participant will:

Prior to implementation:

- Review pumping plant evaluation, season of use, existing pump motor needs, and current operation.
- Evaluate site specific energy alternatives and net benefit of the Variable Frequency Drive(s).
- Ensure that energy utility provider has reviewed and approved location of installation on pump motor, including needs for electrical harmonic filter.
- Obtain written documentation of utility approval for site with requirements for installation.

During implementation

- Ensure installation meets federal National Electrical Code and any local or state codes.

After implementation

- Provide documentation of installation including first season energy use for comparison to prior years to NRCS for review to verify implementation of the enhancement.
- Monitor and maintain system for the life span of the practice (10 years).

NRCS will:

Prior to implementation

- Provide and explain NRCS Conservation Practice Standard Pumping Plant (Code 533) as it relates to implementing this enhancement.
- As needed, provide additional technical assistance to the participant as requested.
- Review with the participant the costs and benefits of the installation of Variable Frequency Drive(s).
- Develop written specifications describing site specific details of installation, including:
 - The replacement or retrofit system and/or related components or devices.
 - Baseline system energy usage and potential energy savings from the implementation of this enhancement.
 - Plan view showing the location of the measures in relation to other structures or natural features, where appropriate.
 - Electrical wiring that meets the requirements of the National Electrical Code.
 - Operation and maintenance plan that is consistent with the purpose(s) of this practice, its intended life, and safety requirements.



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After implementation

- Verify energy savings based on system efficiency before and after implementation of the enhancement

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____

Contract Number _____

Total Amount Applied _____

Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

North Dakota Sideboards:

Enhancement may only be contracted if a Type 2 ASABE S612 Energy Audit has been completed which identifies the need for a VFD on the system and payback within the practice lifespan. A qualified energy auditor must complete the audit and an NRCS engineer with JAA must complete a functional review/

Audit may be funded under CSP E533B, EQIP CEMA 228, or funded by the producer out of pocket.

NRCS engineers may complete design of the VFD after the audit is completed.