



## 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.



*After implementation*

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

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**Design Approvals & Acknowledgements:**

Design Approval	Date	Job Approval Authority
Designed by:		
Approved by:		

**Client's Acknowledgement Statement:**

The client acknowledges:

- I have received a copy of the specification and understand the contents and requirements.
- It is my responsibility to obtain all necessary permits and/or rights and to comply with all ordinances and laws pertaining to the application of this practice.
- I will not begin installation of this practice until I have received appropriate approval to do so. I understand NRCS also has Federal and state laws to comply with that may take some time to address (e.g. cultural resources).

Client's Signature	Date

**Certification Documentation:**

	Field Evaluation: Post-treatment inventory, measurements, notes, as-built, and supporting documentation (document completion in conservation plan), as required.
	Map(s): Including field numbers, fields treated, and units treated (may document on conservation plan map), as required.
	Photos or other supporting documentation (e.g., seed tags, soil tests, receipts, invoices, spray records, fertilizer records, etc.)
Brief Description of Work Accomplished (types of equipment used, date of application, extents and quantities installed, etc.)	

**Certification Statement:**

The employee certifies the implementation of this conservation practice:

- Meets the purpose, general criteria, and any required additional criteria as documented in the conservation practice standard and/or enhancement sheet.
- Meets the specifications contained herein and is complete.
- Conforms to my existing Job Approval Authority controlling factors and levels.

Name	Date	Job Approval Authority

<b>Field Level Certification</b> – For multiple applications of this design.				
Land Unit/ Contract Item Number	Date	Unit(s)	Amount Installed	Certifier