SOUTH DAKOTA DEPARTMENT OF REVENUE

Ag Land Pilot Study

October 2019

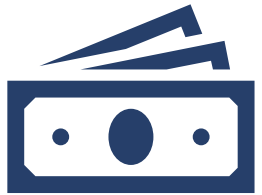
Overview

History

Valuation Models

Ag Land Value Change Analysis

Tax Impacts



Tax Shift Analysis

History

Senate Bill 4 Pilot Study

- 2016 House Bill 1007 authorized South Dakota State University (SDSU) “to conduct research concerning the methods used to determine agricultural land production capacity and to update the data used in the soil tables.” SDSU has undertaken research and has provided data to the South Dakota Department of Revenue (DOR) based on its research.

- 2019 Senate Bill 4 requires the DOR to “study the impact of changes to the methodology of rating soils for purposes of assessing agricultural land” and “to analyze the impacts of any recommended changes to the soil ratings.”

Valuation Models

Data Inaccuracies

NRCS county boundary lines used by SDSU were not accurate

- Boundaries for the pilot counties were updated to use official GIS lines

SDSU included both non-taxable and non-ag land

- Only currently assessed agricultural land was included

Some of the SDSU tables were already outdated due to Web Soil Survey updates

- Newest Web Soil Survey layer was applied

Disclaimers

- SDSU data left off soil types with very small amounts of acres within a county
  - Usually accounted for less than 100 acres total in the county

- The Cropscape layer being used to determine Actual Use is from 2017 (most current)

- Soils that had no crop or non-crop data were given the lowest non-crop rating of 0.10

Valuation Models

New Soil Table Model

- Current system uses soil tables based on old soil surveys that are not up to date.
- This model uses the most up to date soil information from NRCS.
- This model uses new soil ratings developed by SDSU based upon the updated soil information.

Valuation Models

Most Probable Use Model

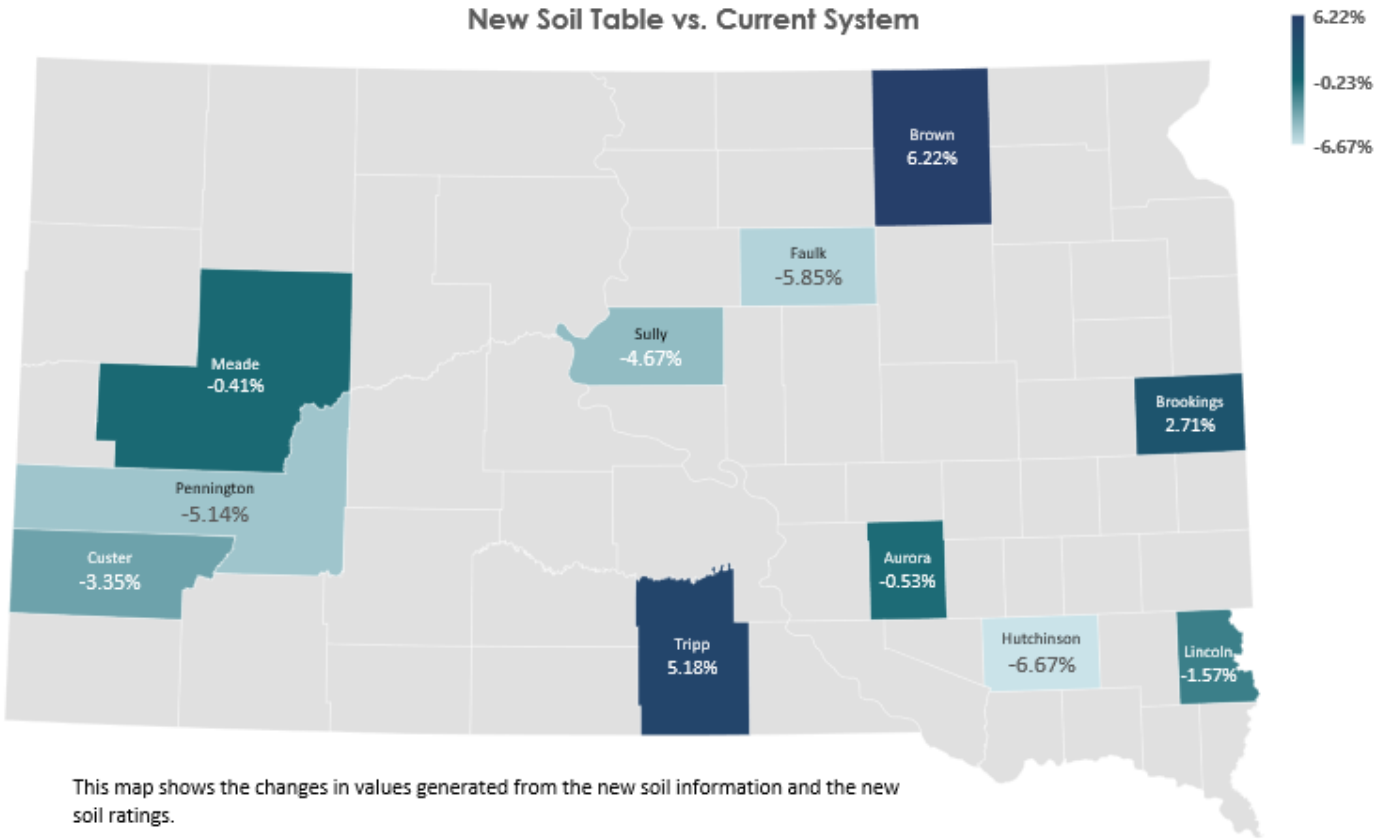
- Created by Dr. Elliott
- MPU Model uses machine learning with a 50% tipping point
- This model creates its own crop vs. non-crop classification system

Actual Use Model

- Created by Dr. Elliott by comparing the Cropscape layer to the soil ratings
- Ag land is assessed as crop or non-crop based upon how the property is being used
- This model predicts value based on management decisions

Ag Land Value Change Analysis

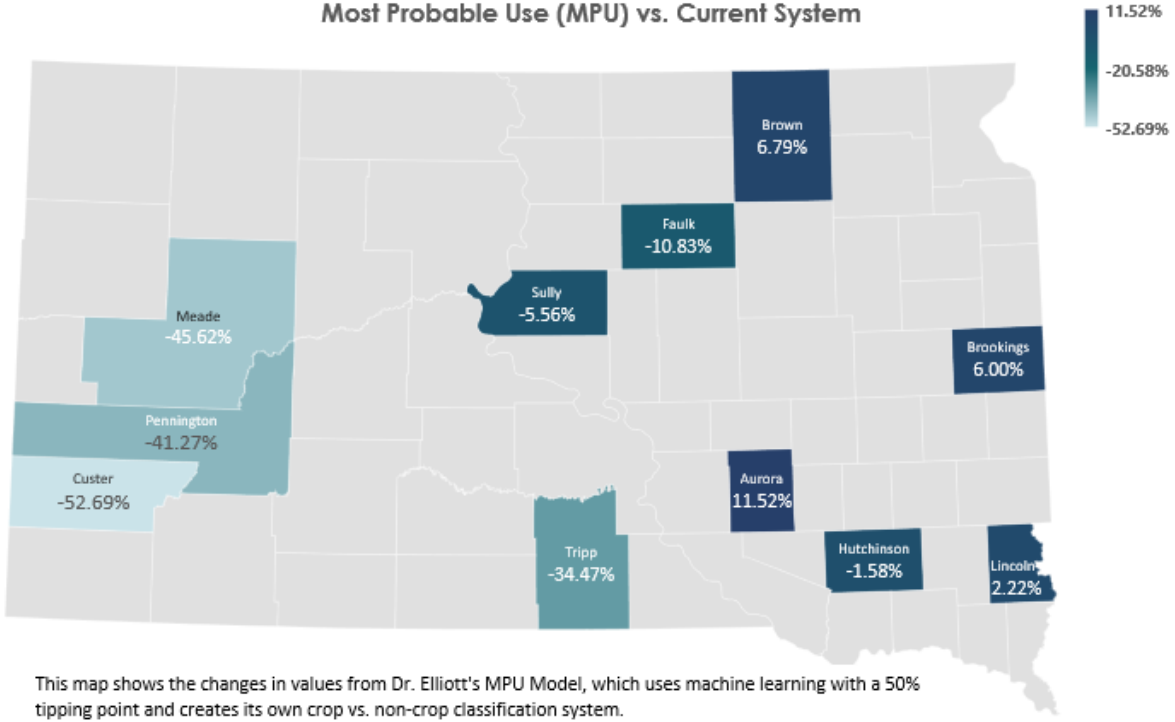
Bare Ag Land Valuation Change
New Soil Table vs. Current System



This map shows the changes in values generated from the new soil information and the new soil ratings.

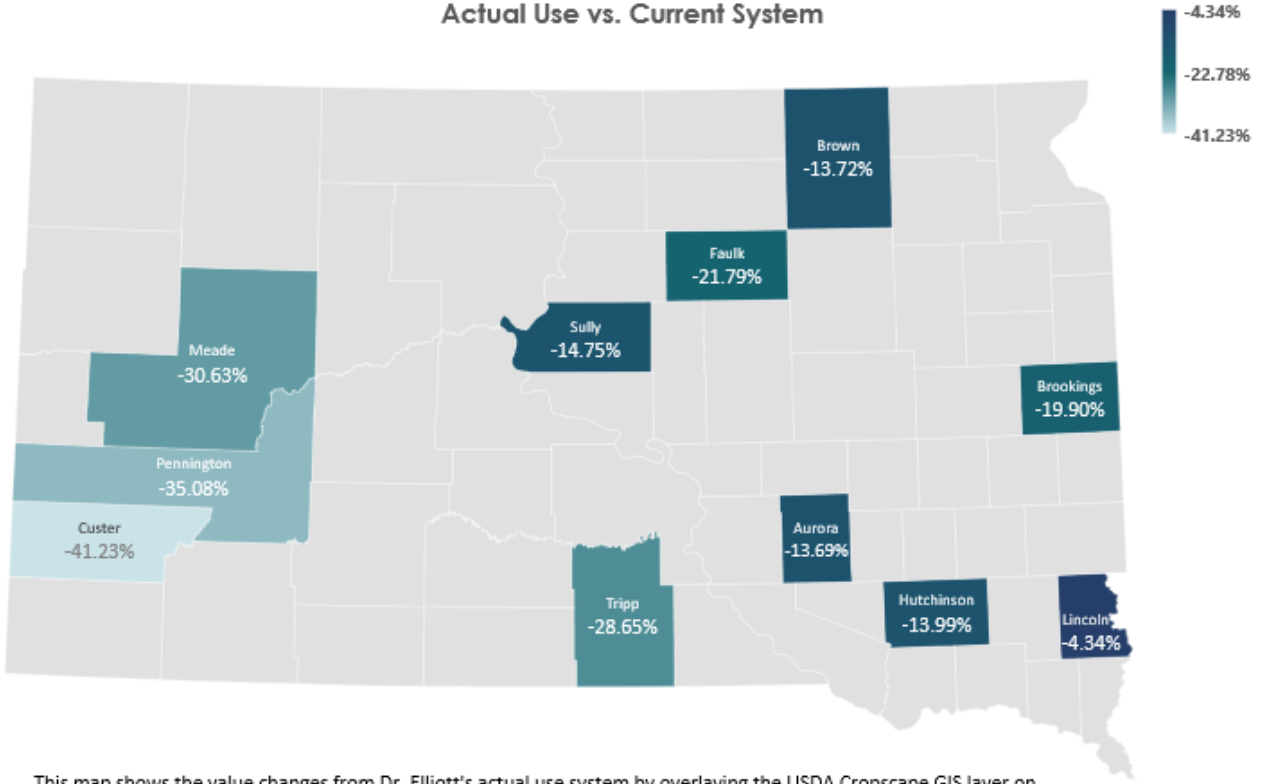
Bare Ag Land Valuation Change

Most Probable Use (MPU) vs. Current System



This map shows the changes in values from Dr. Elliott's MPU Model, which uses machine learning with a 50% tipping point and creates its own crop vs. non-crop classification system.

Bare Ag Land Valuation Change
Actual Use vs. Current System

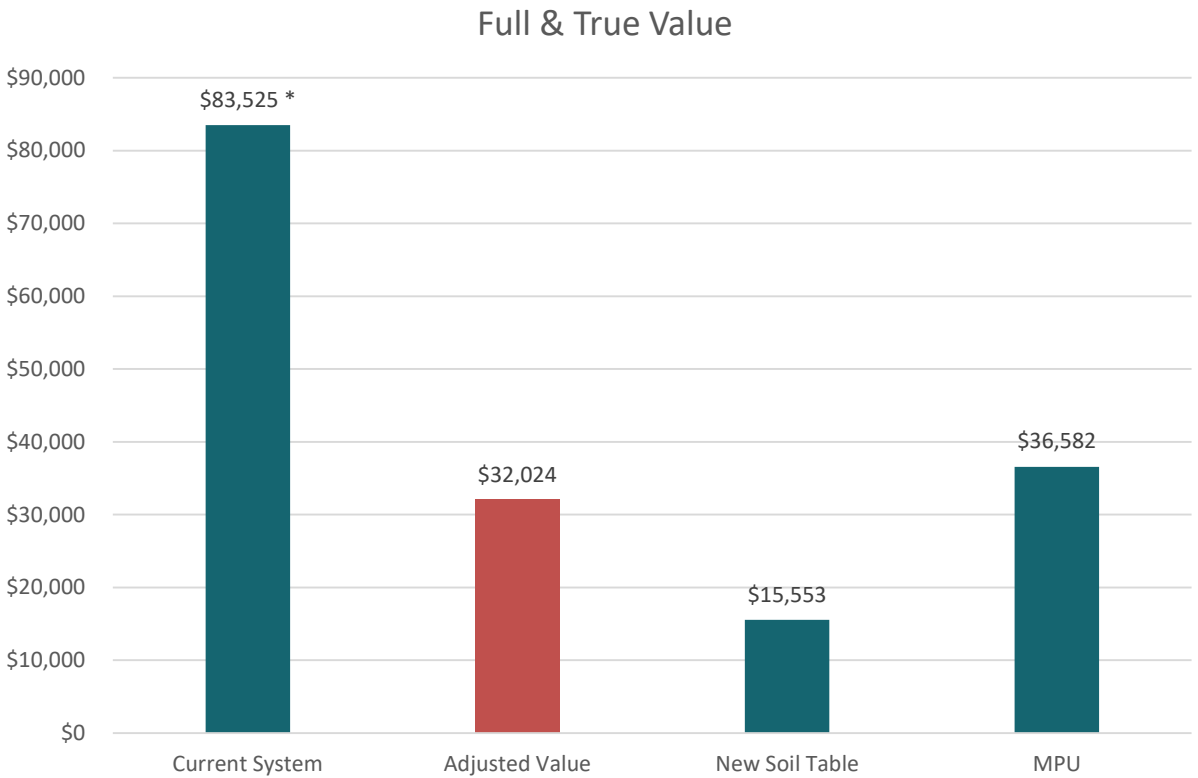


This map shows the value changes from Dr. Elliott's actual use system by overlaying the USDA Cropscape GIS layer on top of the new soil layer from NRCS.

Parcel Examples

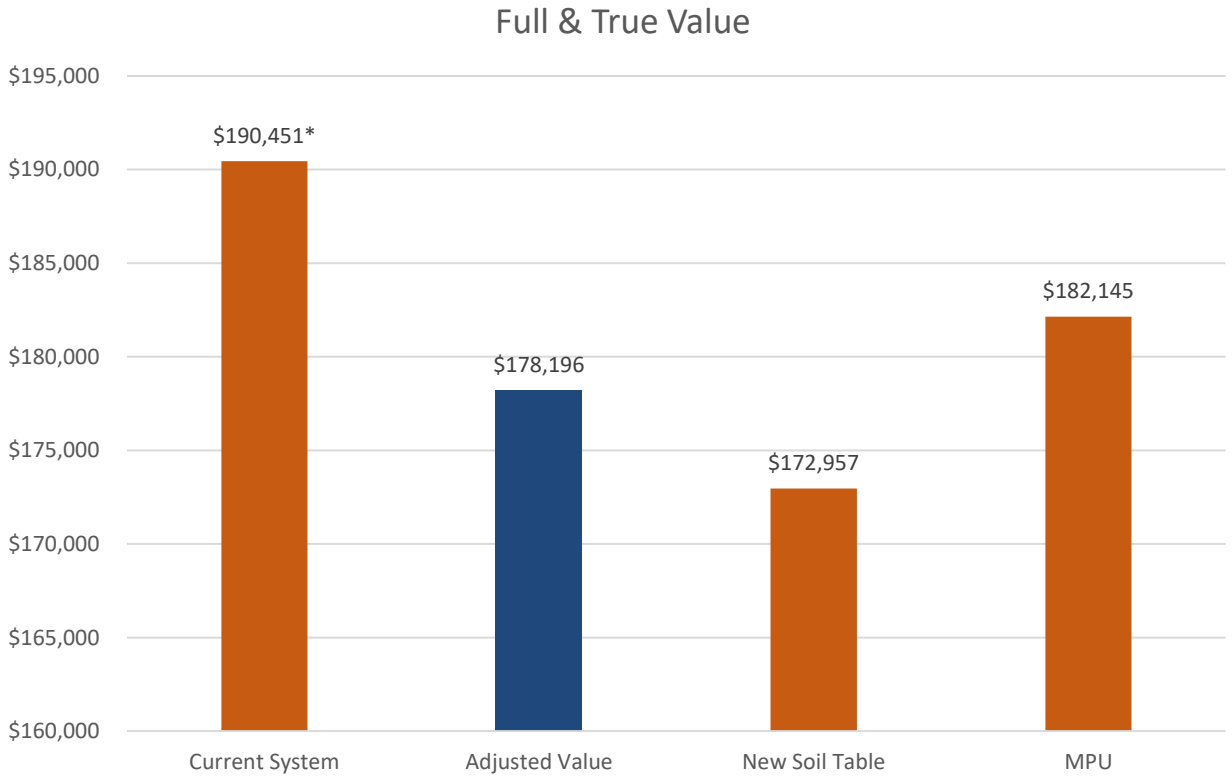
Brown County Adjusted Parcel

*Brown County Adjusted Value **$32,024**



Meade County Adjusted Parcel

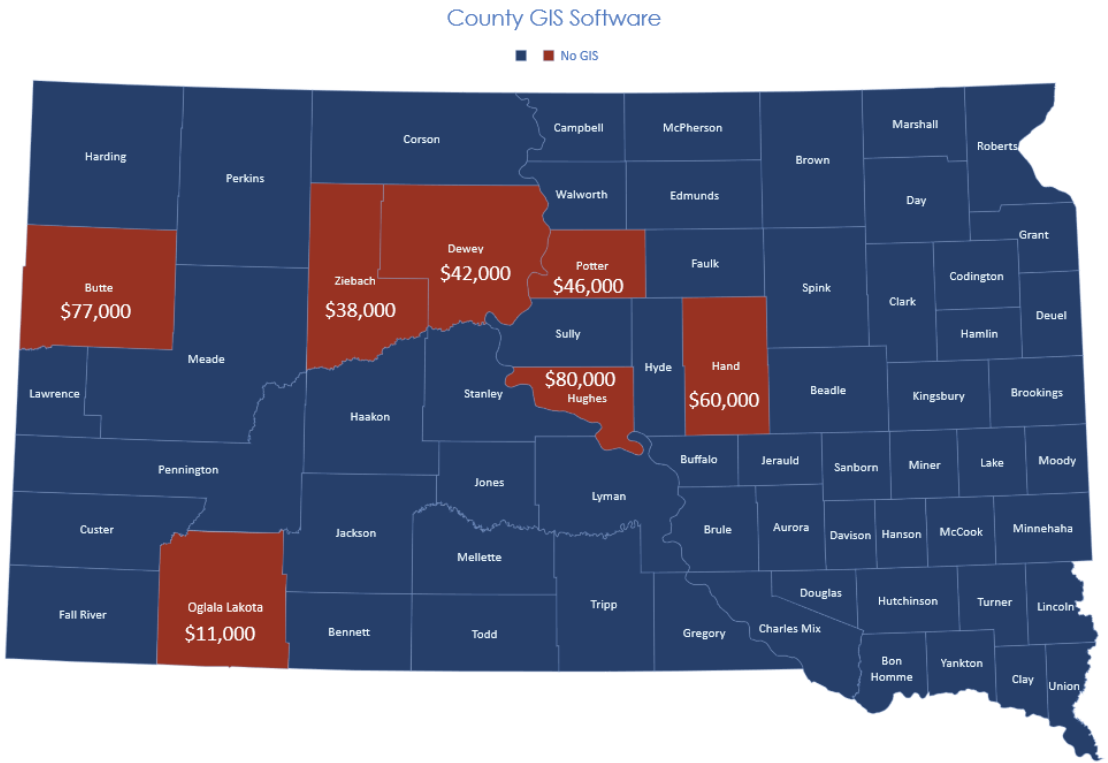
*Meade County Adjusted Value **$178,196**



Barriers to Implementation

Barriers to Implementation - All Models

GIS needed for Web Soil Survey



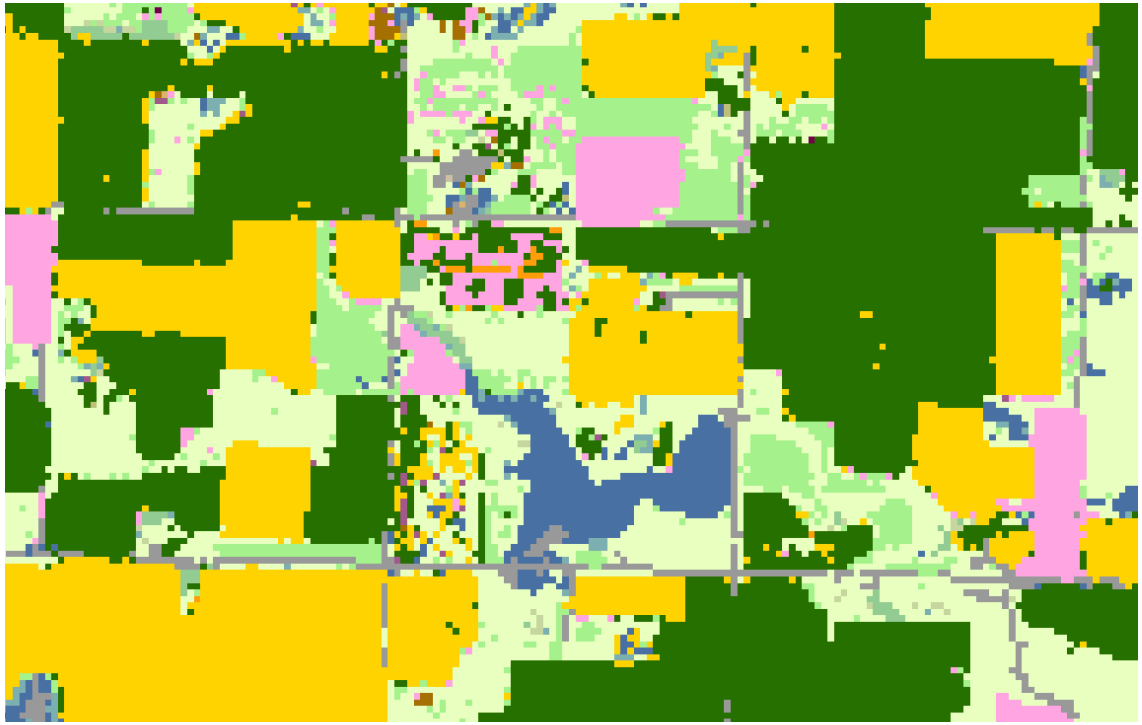
Barriers to Implementation - MPU Model

- Machine Learning Technology is very complicated and difficult to explain to taxpayers.
- Would require hiring an FTE to maintain the system or continue to pay SDSU to update the code.

Barriers to Implementation – Actual Use

- Most county offices do not have the staff and resources needed to implement this system.
- Technology used to provide estimates for this pilot study are not accurate enough to implement an assessment system.
- Accuracy issues of Cropscape

Cropscape Layer Accuracy Issues



Tax Impacts

Tax Impact Overview

County General

- Levy is the same for all land classes.

School Capital Outlay Fund

- Levy is the same for all land classes.

State Aid to Education Formula

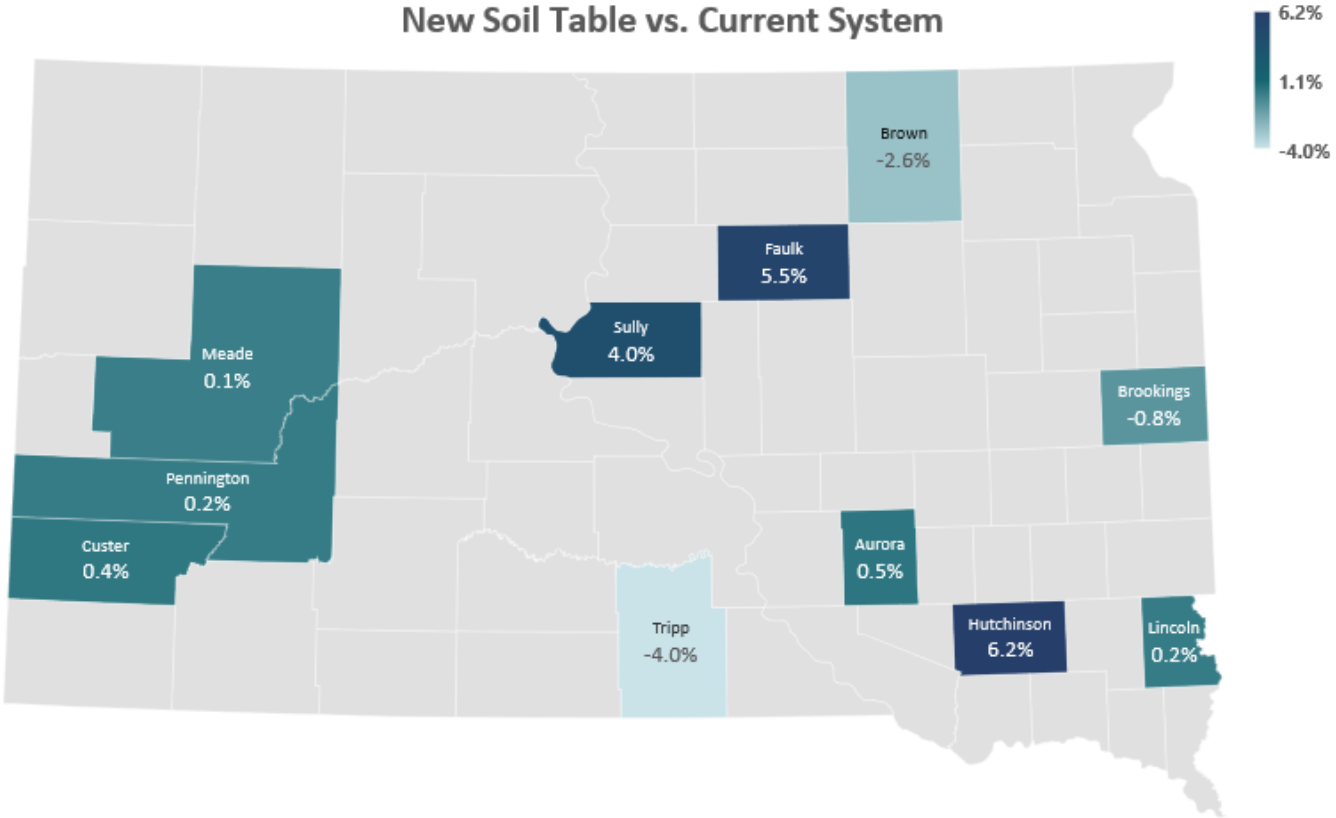
- District funding is made up of local property taxes and state dollars.

School General Fund

- Levies differ based upon classification of property:
  - Agricultural
  - Owner Occupied
  - Commercial

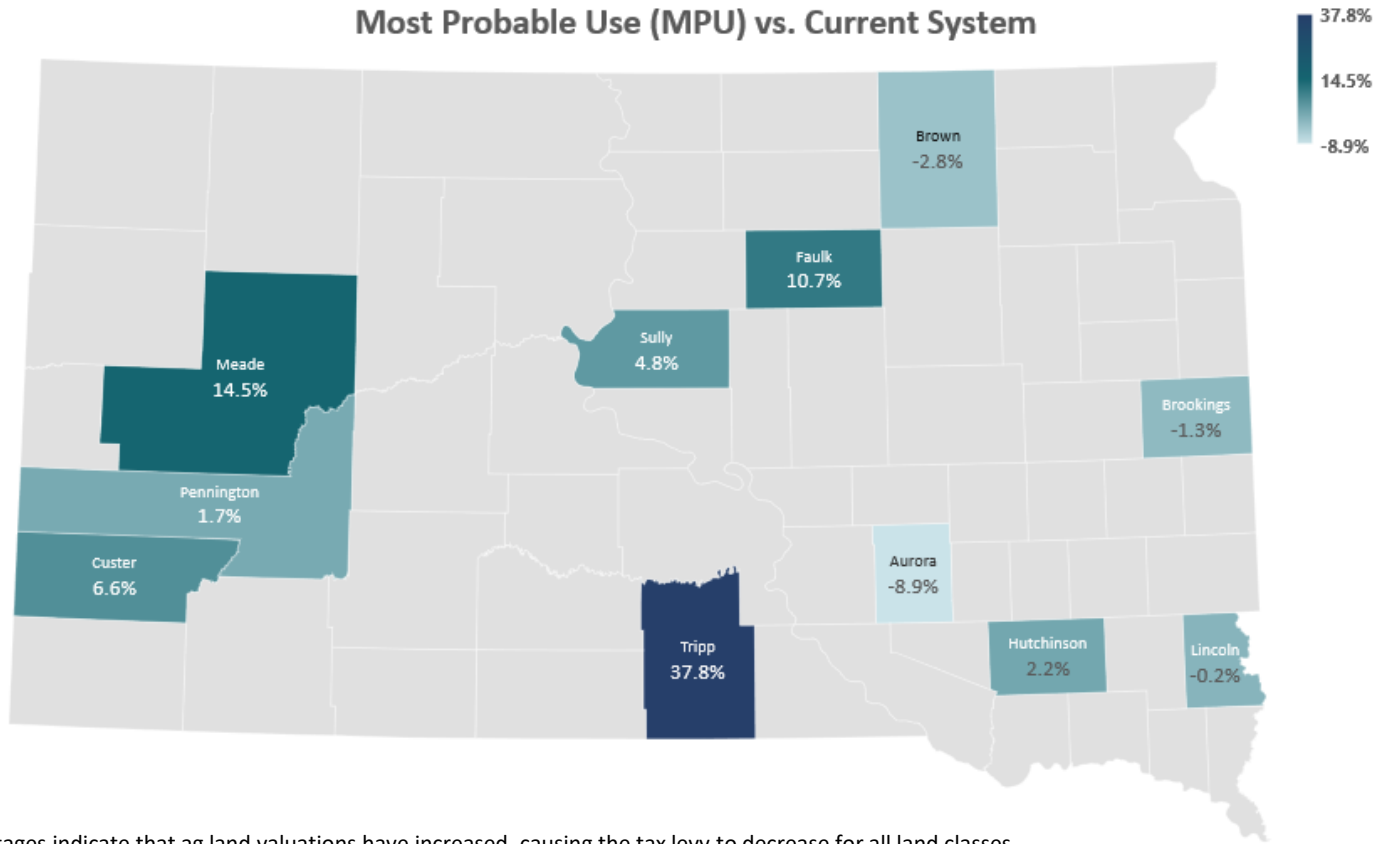
Tax Shift Analysis
County General Fund

Projected County General Fund Tax Shifts to Non-Ag Classes
New Soil Table vs. Current System



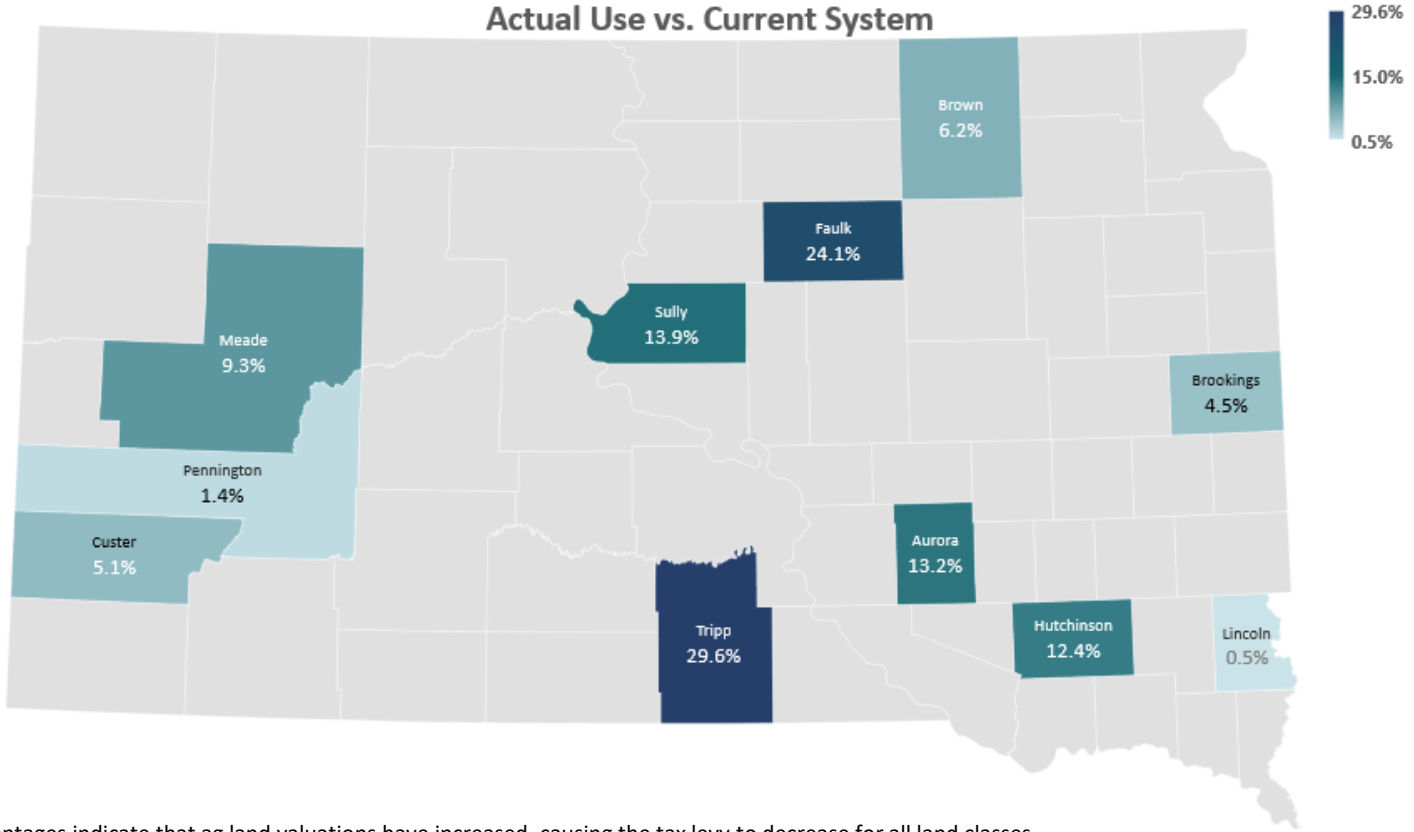
*Negative percentages indicate that ag land valuations have increased, causing the tax levy to decrease for all land classes.

Projected County General Fund Tax Shifts to Non-Ag Classes
Most Probable Use (MPU) vs. Current System



*Negative percentages indicate that ag land valuations have increased, causing the tax levy to decrease for all land classes.

Projected County General Fund Tax Shifts to Non-Ag Classes
Actual Use vs. Current System



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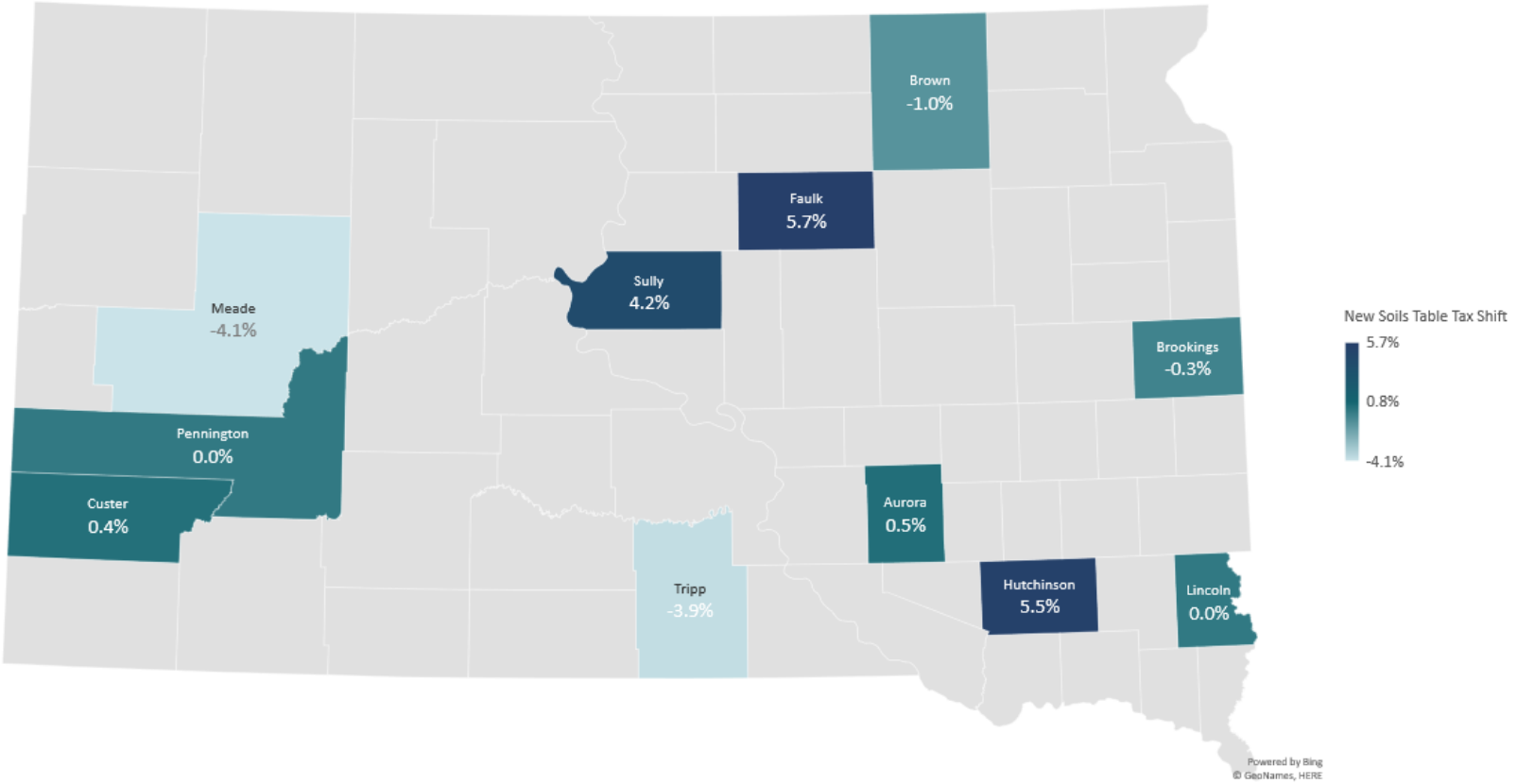
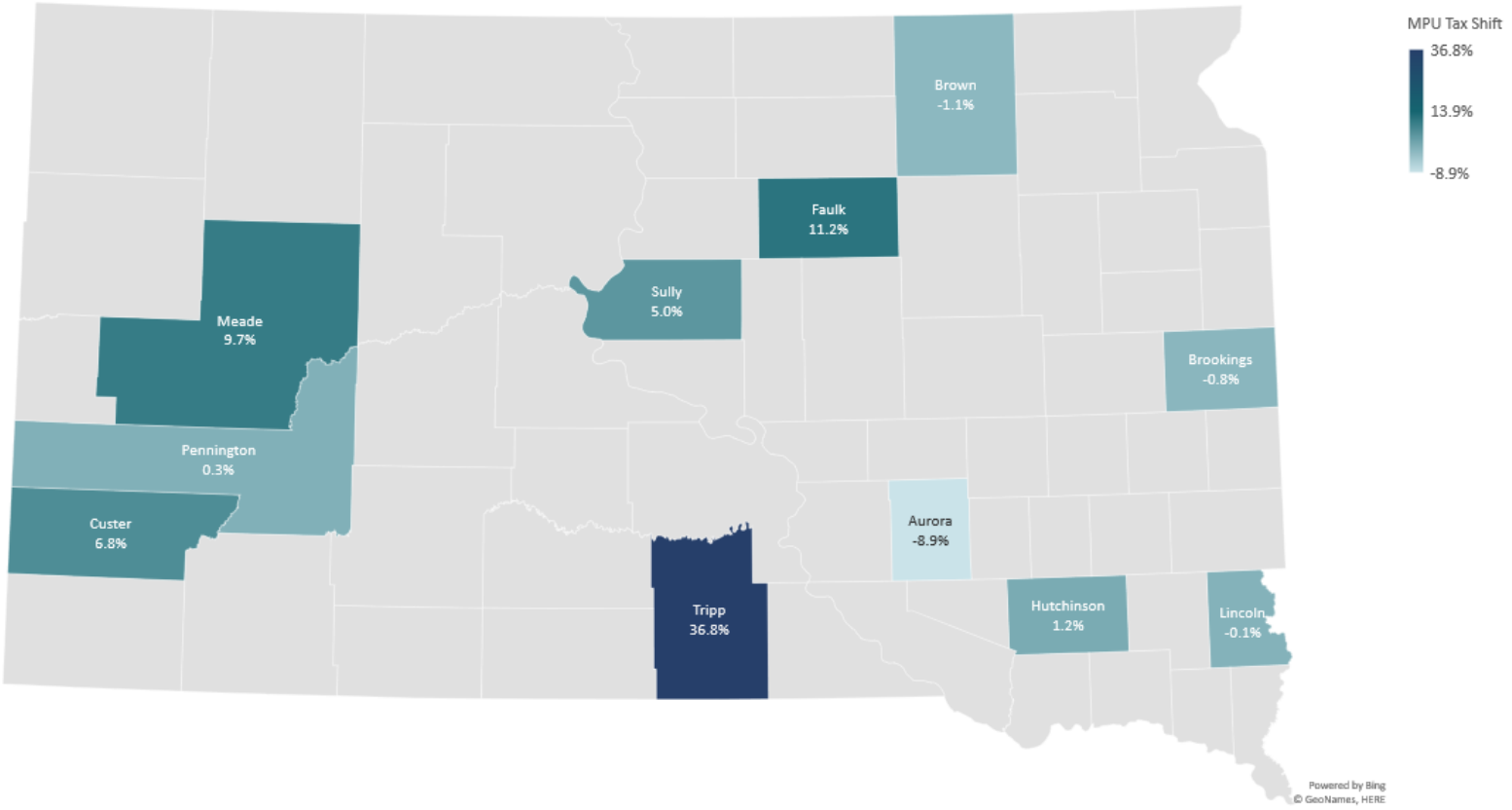
Tax Shift Analysis
School Capital Outlay

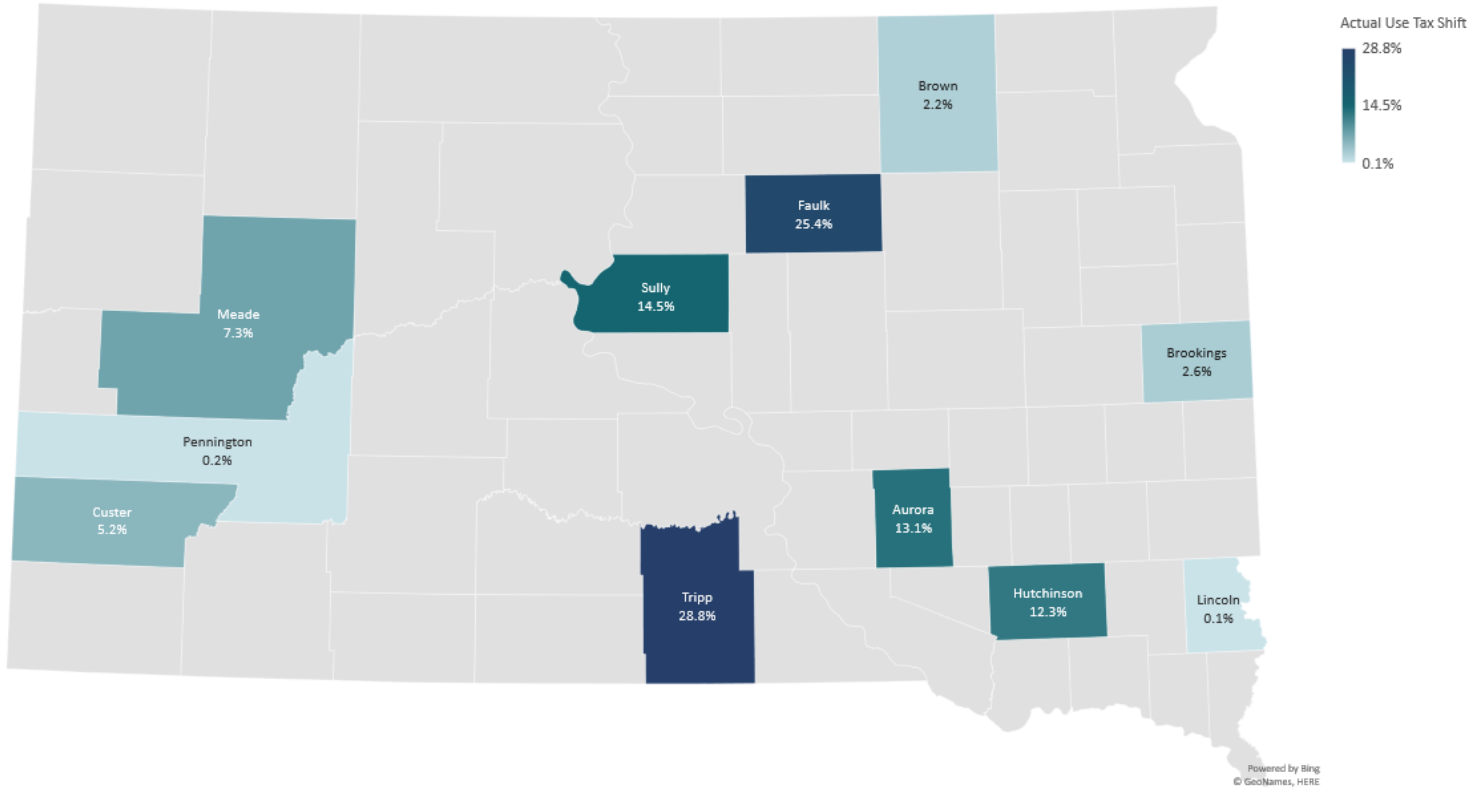
Projected School Capital Outlay Tax Shifts to Non-Ag Classes
New Soil Table vs. Current System



Projected School Capital Outlay Tax Shifts to Non-Ag Classes
Most Probable Use (MPU) vs. Current System



Projected School Capital Outlay Tax Shifts to Non-Ag Classes
Actual Use vs. Current Sytem



Tax Shift Analysis
State Aid to Education Formula

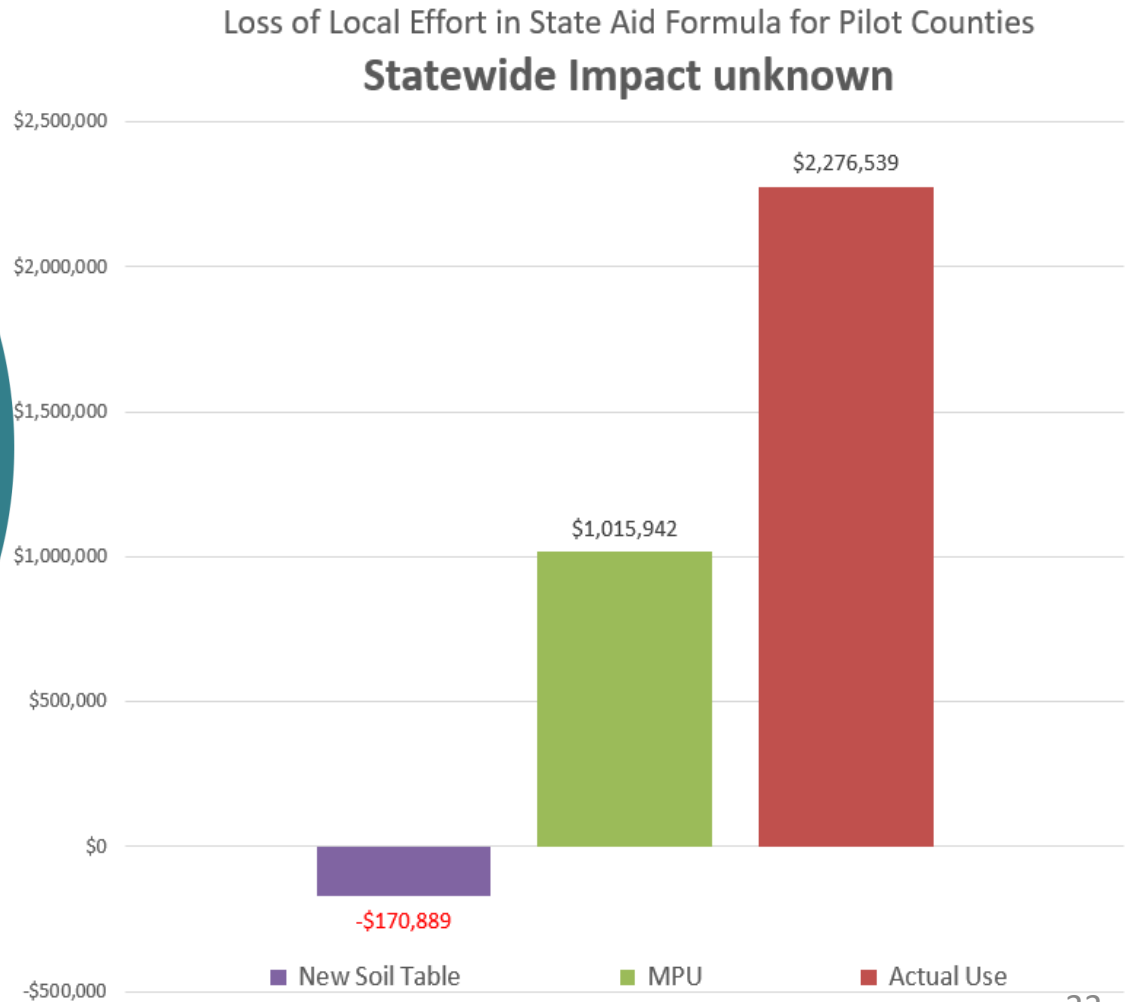
Data is from 1/5 of the number of school districts in the State

Additional funding would need to come from:

- State Aid;

or

- Local Effort (change in General Fund levies)



Barriers to Implementation – Tax Shift Analysis

State Aid Funding

- Determination of how the loss of Local Effort would be spread among the land classes
- Difficulty of projecting valuation changes to calculate levies

School Capital Outlay

- Extreme value decreases could cause levy increases
  - Schools would start hitting the $3.00 levy limit, resulting in less tax dollars.
  - Schools with debt obligations in their Capital Outlay fund may be forced to go over the $3.00 levy limit to not default on their debt payment

Taxpayers

- Could see large increases in taxes on individual parcel basis

Summary

1. **New Soil Table**
   - Needed to update 30+ year old soil survey data
2. **MPU**
   - Very complicated to explain
3. **Actual Use**
   - Most difficult to implement

Questions?

South Dakota
Department of Revenue

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South Dakota DOR

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