The Growing Climate Solutions Act

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overview

- USDA/EPA carbon market study
- USDA advisory committee
- technical assistance provider & 3d party verifier certification
- potentially eligible practices
- website listing certified providers & verifiers
- producer protections
- what happens next? climate change?

current ag carbon market

- some farmers are selling carbon credits for annual increases in carbon sequestration to businesses & individuals seeking to reduce their carbon footprint
  - corporate purchases driven by (1) meeting corporate sustainability goals & (2) anticipating Biden administration carbon restrictions
- this market is very unclear. Don't know prices, practices, buyers, sellers, measurement & verification. Carbon credit sales are private contracts, no disclosure requirements.
- In an attempt to bring more transparency to the ag carbon credit market, the US Senate has adopted S. 1251, the Growing Climate Solutions Act

S. 1251, the Growing Climate Solutions Act

- On June 24, 2021, the US Senate adopted S. 1251, the Growing Climate Solutions Act of 2021.
  - not yet adopted by House of Representatives
- S. 1251 co-sponsored by 54 senators, including Nebraska's Sen. Deb Fischer.
- S. 1251 seeks to make it easier for farmers and ranchers to participate in voluntary carbon credit markets, and to receive a fair share of the carbon credit revenue they generate.
- If adopted by the House and signed by the president, S. 1251 would go a long way in facilitating effective producer participation in US carbon markets.

S. 1251 USDA/EPA carbon markets study

- Look at how voluntary carbon markets operated over the past four years, including supply of & demand for ag carbon credits.
- Project supply & demand for ag carbon credits for the next four years.
- Identify complications associated with measuring and verifying long term carbon sequestration & other ag practices.
- Identify complications for small, beginning & socially disadvantaged producers participating in carbon markets.

carbon markets study, con't

- Evaluate potential USDA role for improving carbon reduction measurement & verification technologies.
- Examine the extent to which existing carbon markets adequately consider unique challenges facing ag producers regarding carbon credit verification, additionality, permanence & reporting, given regional variations & different ag business arrangement.
  - permanence: forest credits & wildfires
  - business arrangements: e.g. land leasing
- Analyze whether current carbon markets have sufficient flexibility to deal with disrupting those ag practices generating carbon credits due to unavoidable events including production challenges & natural disasters.
- This study will go a long way in identifying problems producers have participating in existing carbon markets & how to improve those markets to benefit producers.

advisory committee

- USDA advisory committee to oversee operation of the USDA program to certify GHG **technical assistance providers** & **third-party verifiers.**
- A majority of the advisory committee members must be farmers, ranchers or private forest landowners.
- Other committee members would represent carbon market verification experts, carbon market participants [buyers & sellers?] & land grant universities.
- The heavy representation of farmers, ranchers & private forest landowners suggests that the certification program is likely to have a farmer-friendly tilt.

certification

- voluntary program for individuals & entities technical service wanting to be certified technical assistance providers & 3d party verifiers
- **tech assistance providers** ("providers"): help producers & forest owners to participate in carbon markets
  - how to increase soil carbon storage
  - how to generate carbon credits (1 ton stored carbon = 1 carbon credit)
  - how to verify carbon sequestration
  - how to participate in carbon markets

certification, con't

- 3d party verifiers ("verifiers"): USDA certified to verify & measure soil sequestration etc.
- providers & verifiers not required to be certified
- only USDA certified providers & verifiers can be listed on USDA website
- farmers not required to use certified providers or verifiers
- if S. 1251 becomes law, interesting to see who becomes certified: extension? conservation districts? ☺

potential credit-generating practices

- land/soil carbon sequestration; reforestation; forest management; preventing conversion of forests, grasslands & wetlands; wetland & grassland restoration; grassland management; NRCS conservation practices
- emission reductions from fuel changes or use reductions; on-farm energy generation; energy feedstock production; fertilizer or nutrient use emission reductions
- livestock emission reductions from feed changes and/or additives; pasture management practices.
- other practices proposed by USDA & approved by advisory committee

potential practices, con't

- likely that USDA could identify measurement & verification protocols for for all of these potential practices
  - protocol rigor will have a lot to do with how much credibility ag carbon credits have in private carbon markets
- also likely that certification protocols for providers & verifiers would include familiarity with all or more of these potential practices
  - or could be certified for some but not all, etc.
- expect USDA certified provider & verifier website would be first stop for producers interested in participating in carbon markets

producer protections

- to the maximum extent feasible, certified providers & verifiers
  - would have to act in good faith
  - provide realistic estimates of costs & revenues
  - ensure that producers received a "fair distribution" of carbon credit revenues
- these consumer protection requirements would be a significant advantage for dealing with a certified provider & verifier
  - private carbon markets would not be required to adopt similar protections

summary

- S. 1251 would not authorize USDA to regulate private voluntary carbon markets
- but hope is that S. 1251 would shape private carbon markets, especially regarding measurement & verification protocols
- also hope that many providers & verifiers would become USDA certified, so that they would follow USDA protocols, including producer protections
- private carbon markets could adopt their own versions of USDA protocols & protections

what's next?

- HR must enact its own version of S. 1251
- if differences between Senate & HR, conference committee to resolve differences
- if Senate & HR both adopt conference committee report, S. 1251 would go to President Biden for signature
- certification could begin within say 12 months of presidential signing.

current carbon sequestration

- 2019: US carbon sequestration = 12% of total carbon emissions
- 98% US carbon sequestration from forests
  - remaining 2% from cropland, grasslands & wetlands.
- I expect some USDA program that encourages farmers to continue & implement GHG reducing practices, regardless of carbon markets and/or US carbon bank
- how big the program is and what payments would be depends on current US budget negotiations, so stay tuned

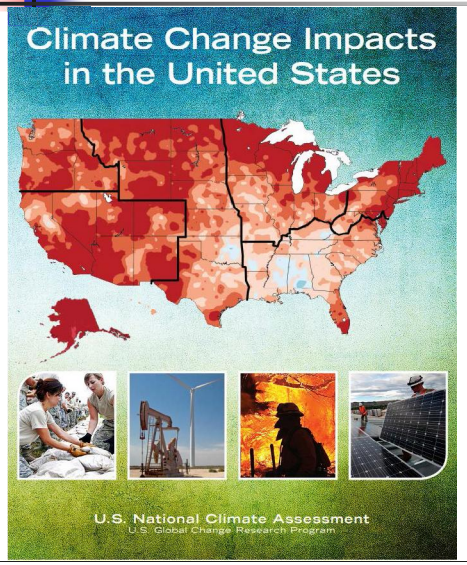
bigger picture

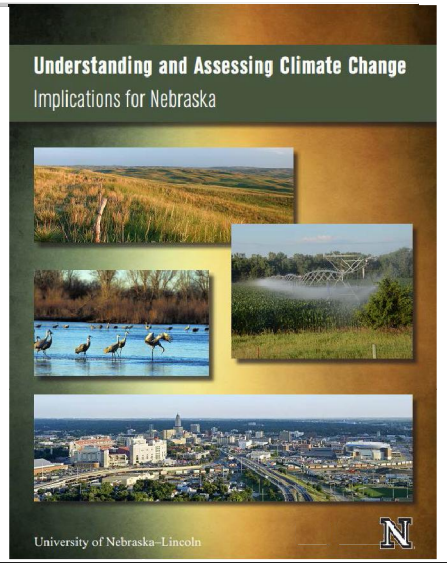
- will there be a market?
- Congress currently debating $3.5 billion budget resolution
- within this sprawling umbrella of new or expanded federal programs is the Clean Energy Standard (CES)
- if the CES program is adopted, US carbon markets will see increased activity
- if CES program not adopted, US carbon markets will shrink to where they were before the 2020 election, when no one was discussing ag carbon markets.

bigger picture, con't

- if CES not enacted, EU & China will dominate future UN climate discussions
- US will have little leverage to move China to pollute less
- US GHG emissions (#2 globally) won't decline much and neither will global GHG emissions
- all the "bads" associated global warming – more floods, hurricanes, droughts, wildfires, sea level rise, arctic sea melt, etc. will accelerate

Climate change—the big challenge (2014)





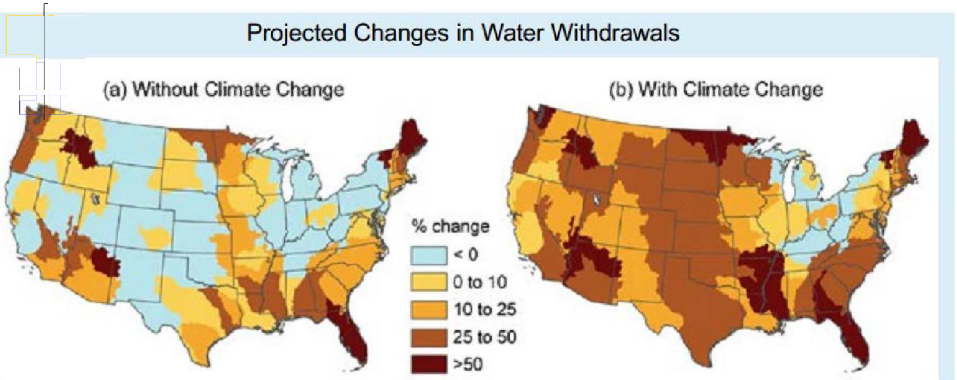
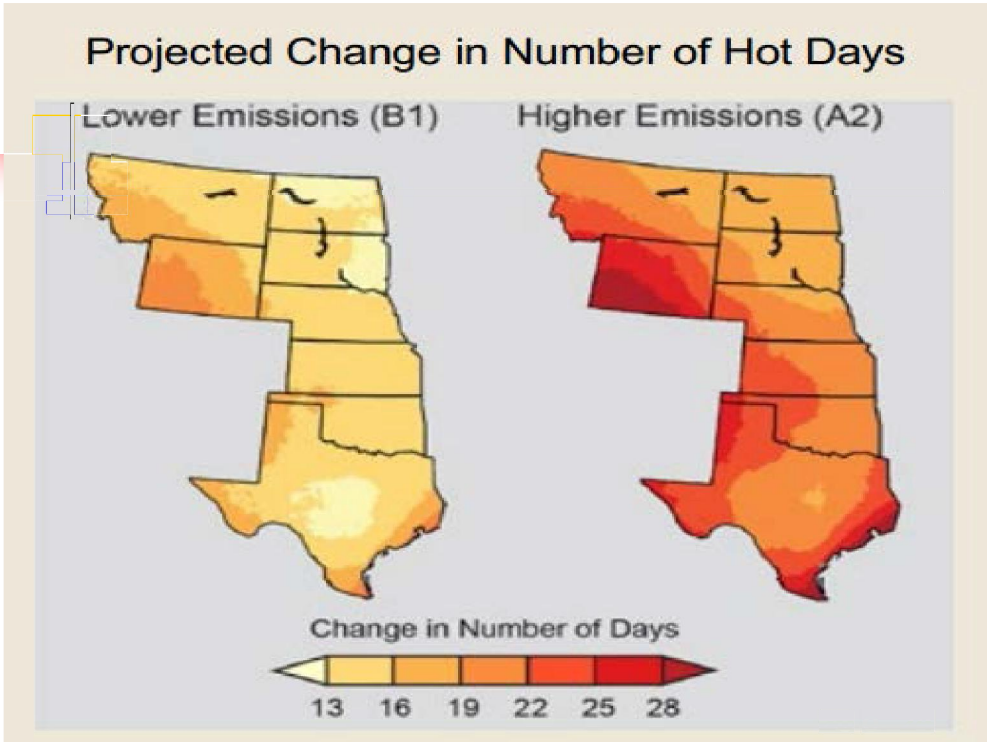
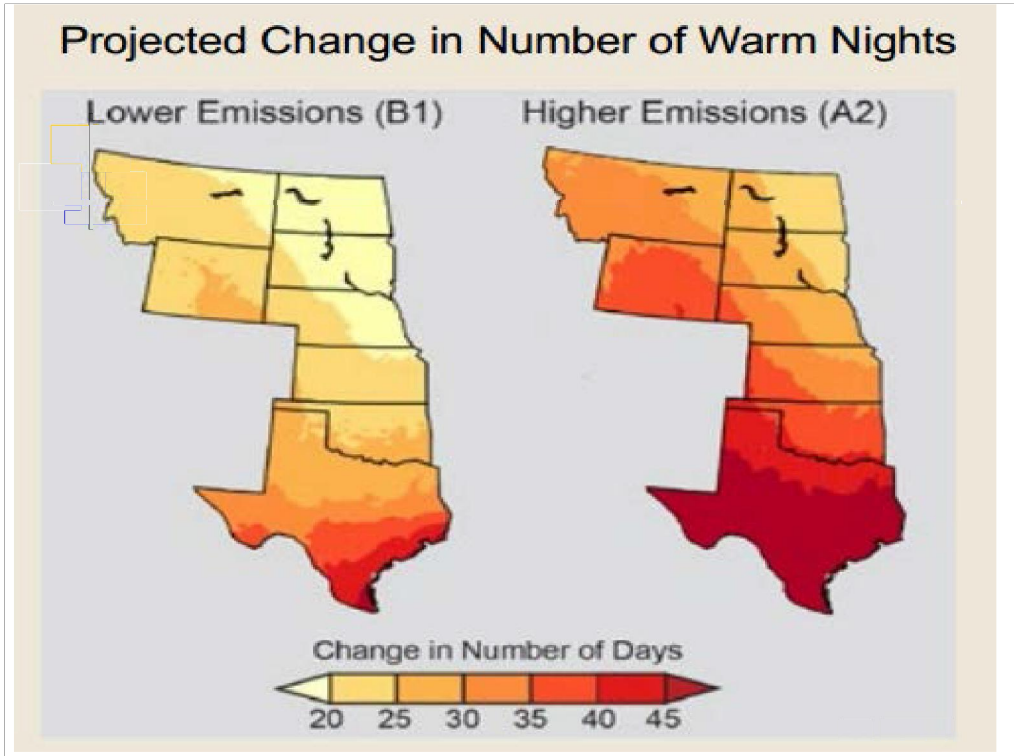


Figure 3.11. The effects of climate change, primarily associated with increasing temperatures and potential evapotranspiration, are projected to significantly increase water demand across most of the United States. Maps show percent change from 2005 to 2060 in projected demand for water assuming (a) change in population and socioeconomic conditions based on the underlying A1B emissions scenario, but with no change in climate, and (b) combined changes in population, socioeconomic conditions, and climate according to the A1B emissions scenario (gradual reductions from current emission trends beginning around mid-century). (Figure source: Brown et al. 2013[99]).





climate change & Nebraska irrigation

- **Dr Don Wilhite, UNL water & climate professor emeritus, said very possible that 2012 drought conditions could become the new norm in Nebraska by 2041-2070**
- Temperatures have already increased 1991-2012 compared to 1901-1960 and will continue to increase—issue is how much will they increase
- Projected temperature increases from 4-5°F in low emission scenarios to 8-9°F in high emission scenario (2071-2099)
  - Low emission scenario—significantly reduce GHG emissions through more wind, solar power generation, energy conservation requirements, etc.
  - High emission scenario—business as usual (no significant GHG reductions)—most likely outcome ☹

climate change & irrigation

- **climate models predict dramatic increase in high temperature days in both high & low emission scenarios**
- Current high temperature days of 100°F or above:
  - Omaha 2.1 days/yr
  - Lincoln 4.6 days/yr
  - Grand Island 3.5 days/yr
  - McCook 10.9 days/yr
  - Scottsbluff 5.3 days/yr
- **High temperature days would increase from 13-16 more days/yr (low emission scenario) to 22-25 more days/yr (high emission scenario) by 2041-70!**
- 2012 drought had 10-21 high temp days in eastern Neb and 21-37 high temp days in western & southwestern Neb

Increasing number of hot days (>100°F) per year

City	Current	Low emission scenario	High emission scenario
Omaha	2.1	15-18 +786%	24-27 +1214%
Lincoln	4.6	18-21 +424%	27-30 +620%
Grand Island	3.5	17-20 +529%	26-29 +786%
McCook	10.9	24-27 +234%	33-36 +317%
Scottsbluff	5.3	18-21 +368%	27-30 +538%

water & irrigation future

- Neb water withdrawals expected to increase 25-50%
- Assume seed companies will do pretty well in continuing to make crops more drought tolerant
- Nonetheless, expect irrigation ground water use to increase substantially
- Will lead to ground water level declines in some if not most heavily irrigated areas
- Irrigators will change crops grown, reduce acres irrigated acres, etc. when well yields decline
- Some areas will eventually revert to dryland production down the road

questions? ☺

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Thank you! ☺