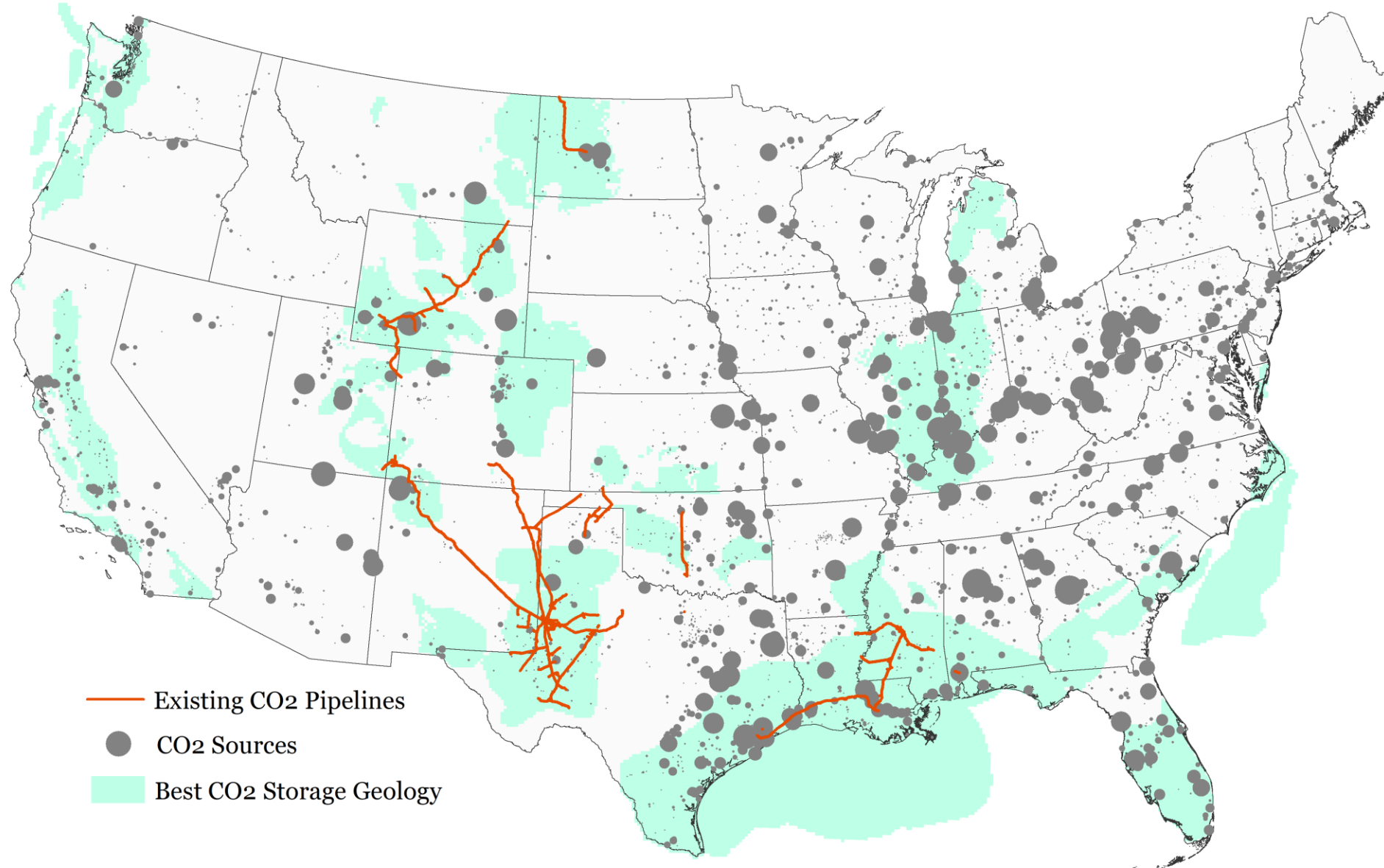
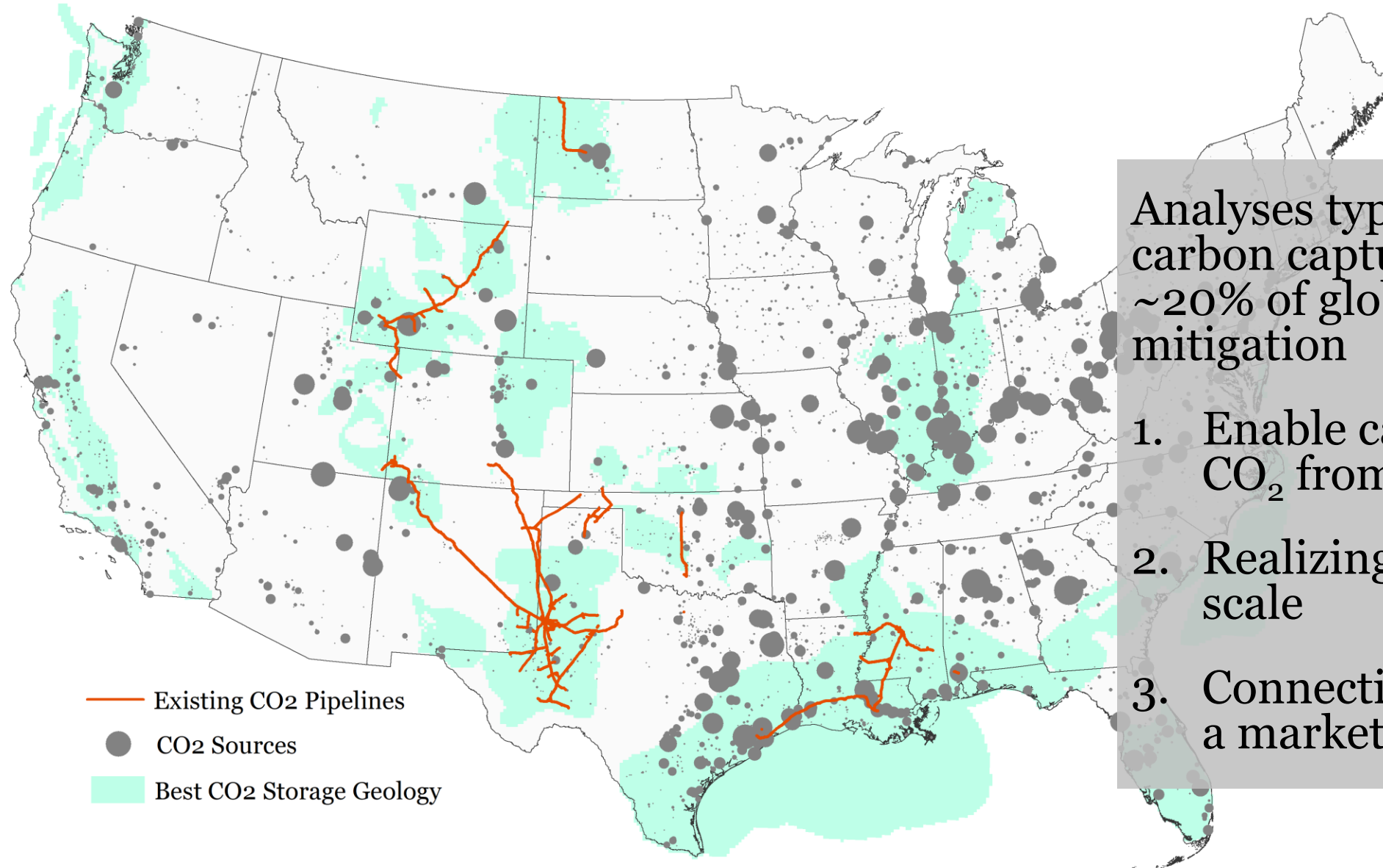


# Existing CO<sub>2</sub> Pipeline Infrastructure



# Importance of CO<sub>2</sub> Pipeline Infrastructure



Analyses typically find carbon capture needed for ~20% of global emissions mitigation

1. Enable capture of more CO<sub>2</sub> from more regions
2. Realizing economies of scale
3. Connectivity—creating a market, optionality

2050 totals: 21,000 km trunk lines + 85,000 km spur lines  
(equivalent to ~22% of US natural gas transmission pipeline total)

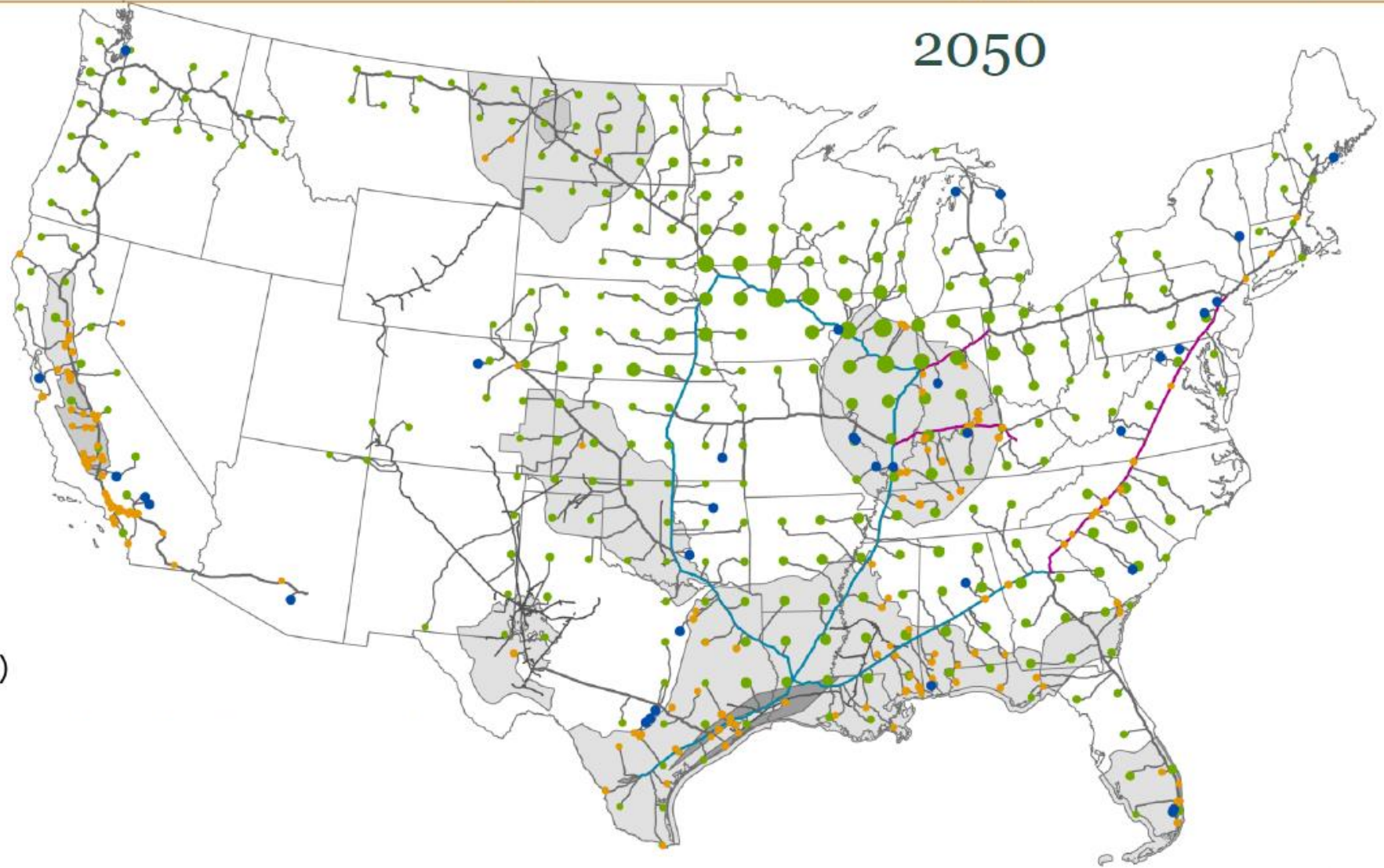


## E+ scenario

929 million tCO<sub>2</sub>/y

106,000 km pipelines

Capital in service: \$170B



### CO2 point source type

- CO2 point sources
- BECCS - power and fuels
- Cement w/ CCS
- Natural gas power CCS oxyfuel

### CO2 captured (MMTPA)

- 0.0006449
- 7.9144
- 15.8282
- 23.7419

### Trunk lines (capacity in MMTPA)

- < 100
- 100 - 200
- > 200

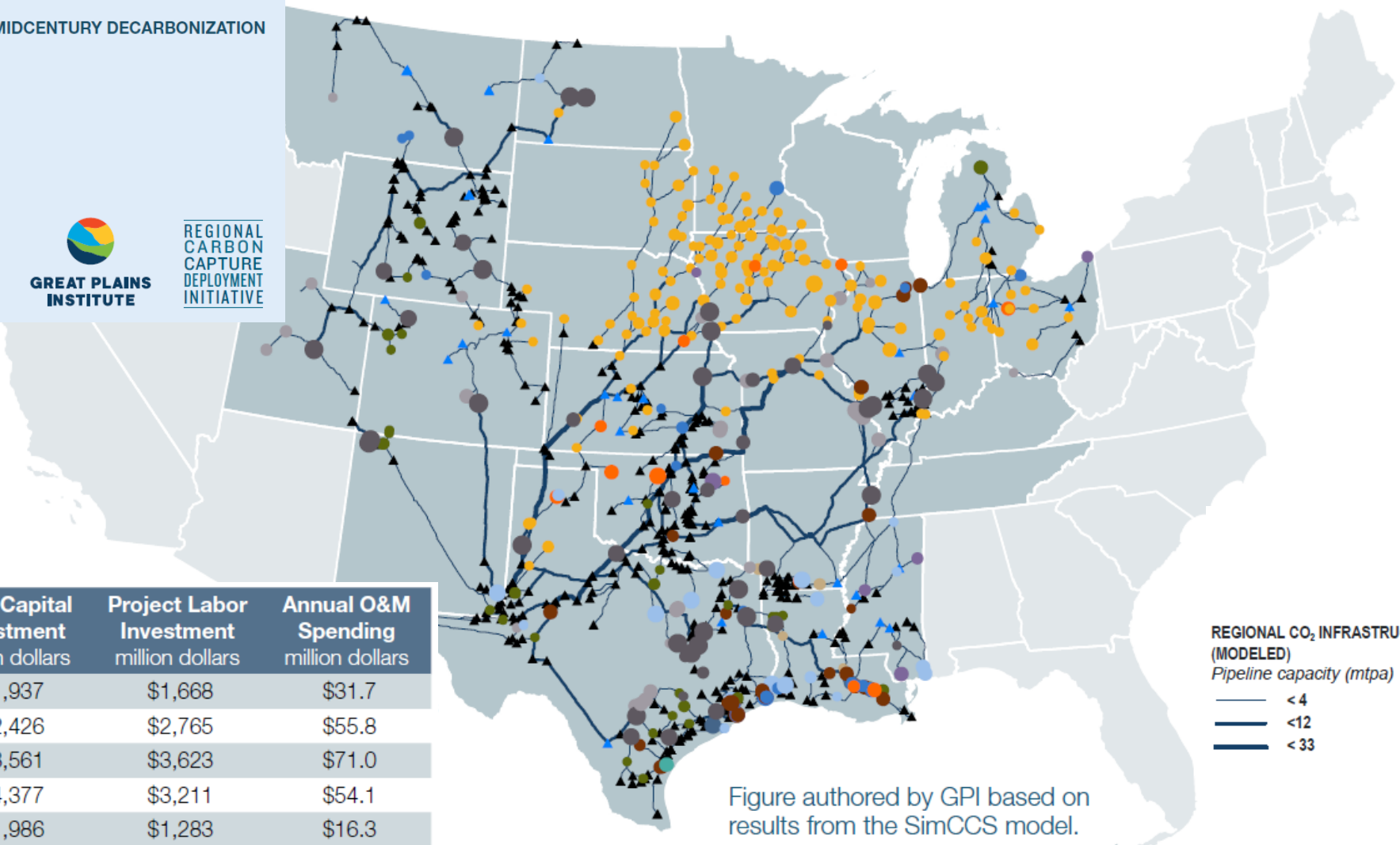
# Transport Infrastructure for Carbon Capture and Storage

WHITEPAPER ON REGIONAL INFRASTRUCTURE FOR MIDCENTURY DECARBONIZATION

Authored by  
Elizabeth Abramson and Dane McFarlane  
Great Plains Institute

Jeff Brown  
University of Wyoming

JUNE 2020



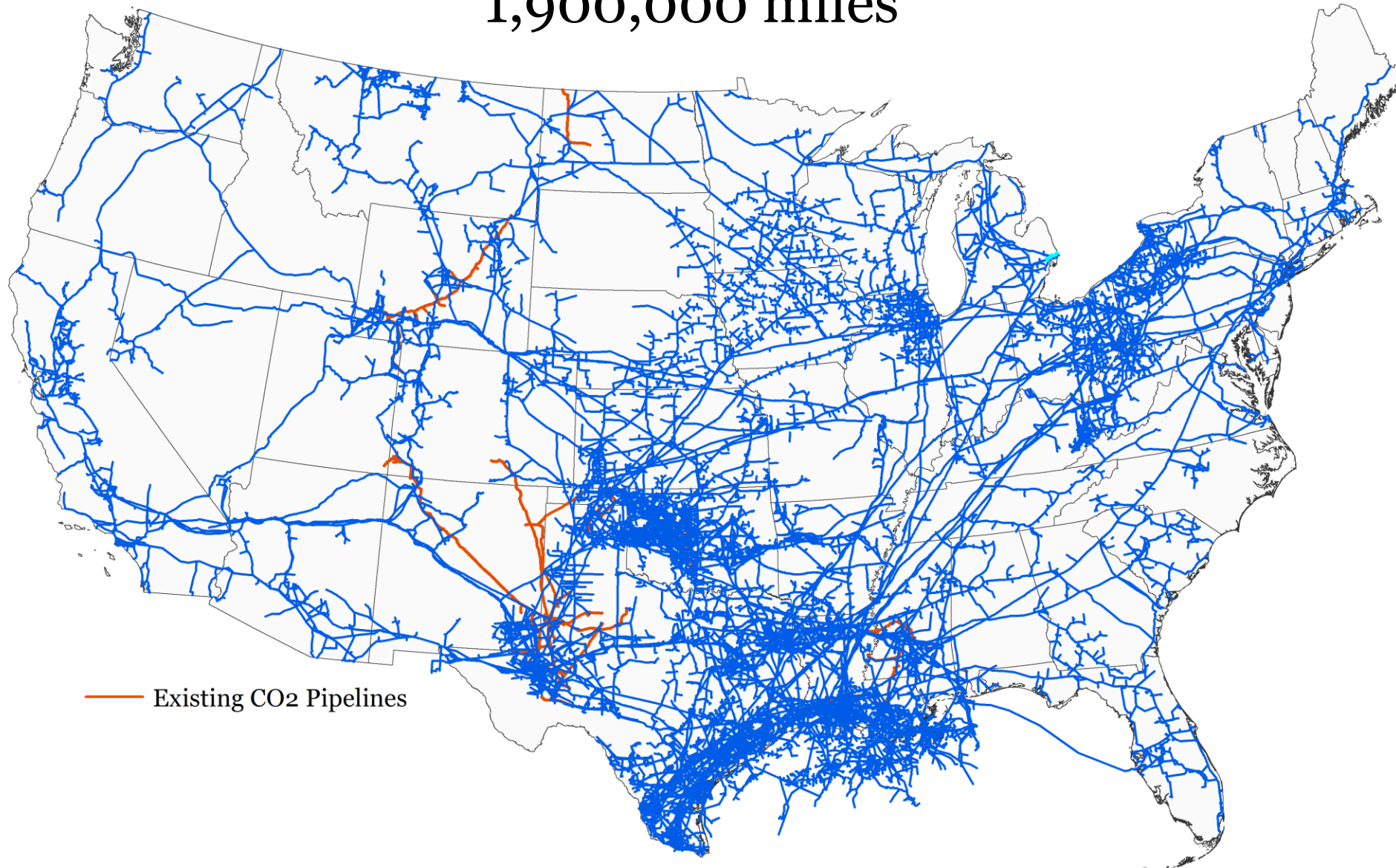
Diameter inches	Length miles	Total Capital Investment million dollars	Project Labor Investment million dollars	Annual O&M Spending million dollars
4"	3,740	\$1,937	\$1,668	\$31.7
6"	6,580	\$2,426	\$2,765	\$55.8
8"	8,376	\$3,561	\$3,623	\$71.0
12"	6,385	\$4,377	\$3,211	\$54.1
16"	1,923	\$1,986	\$1,283	\$16.3
20"	2,202	\$3,388	\$1,845	\$18.7
24"	341	\$637	\$363	\$2.9
30"	277	\$949	\$515	\$3.2
<b>Total</b>	<b>29,923</b>	<b>\$19,261</b>	<b>\$15,272</b>	<b>\$253.7</b>

Figure authored by GPI based on results from the SimCCS model.

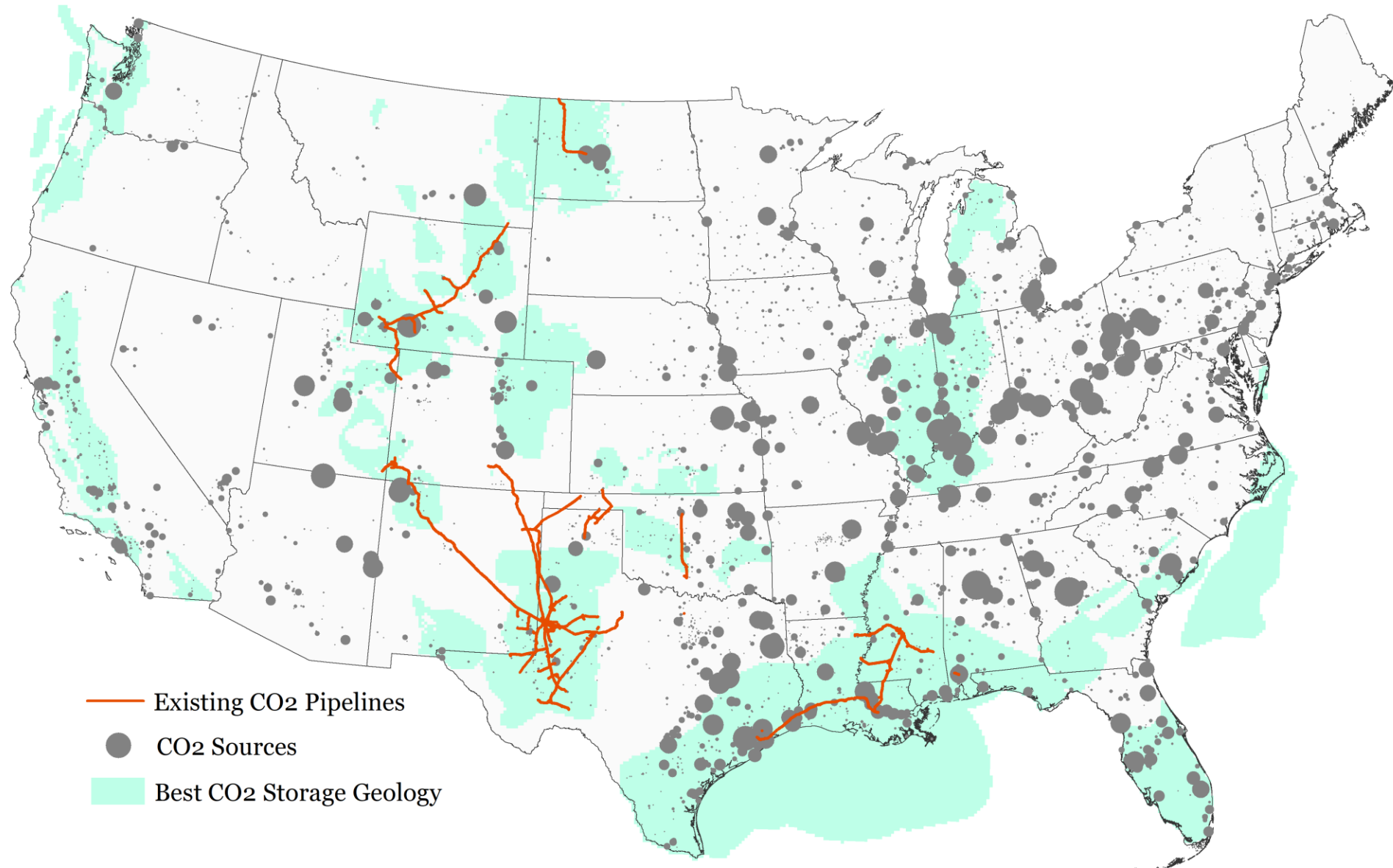
REGIONAL CO<sub>2</sub> INFRASTRUCTURE (MODELED)  
Pipeline capacity (mtpa)  
 — < 4  
 — < 12  
 — < 33

# Existing Oil and Gas Pipelines

1,900,000 miles



# CO<sub>2</sub> Pipeline Infrastructure



- Existing CO<sub>2</sub> Pipelines
- CO<sub>2</sub> Sources
- Best CO<sub>2</sub> Storage Geology

Source data: EIA, DOE Natcarb Atlas