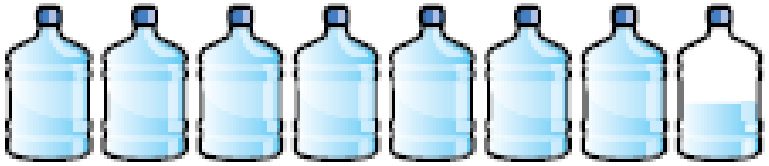
Water Required to Generate One Megawatt-hour of Electricity Using …



Gas/steam combined cycle 7,400–20,000 gallons

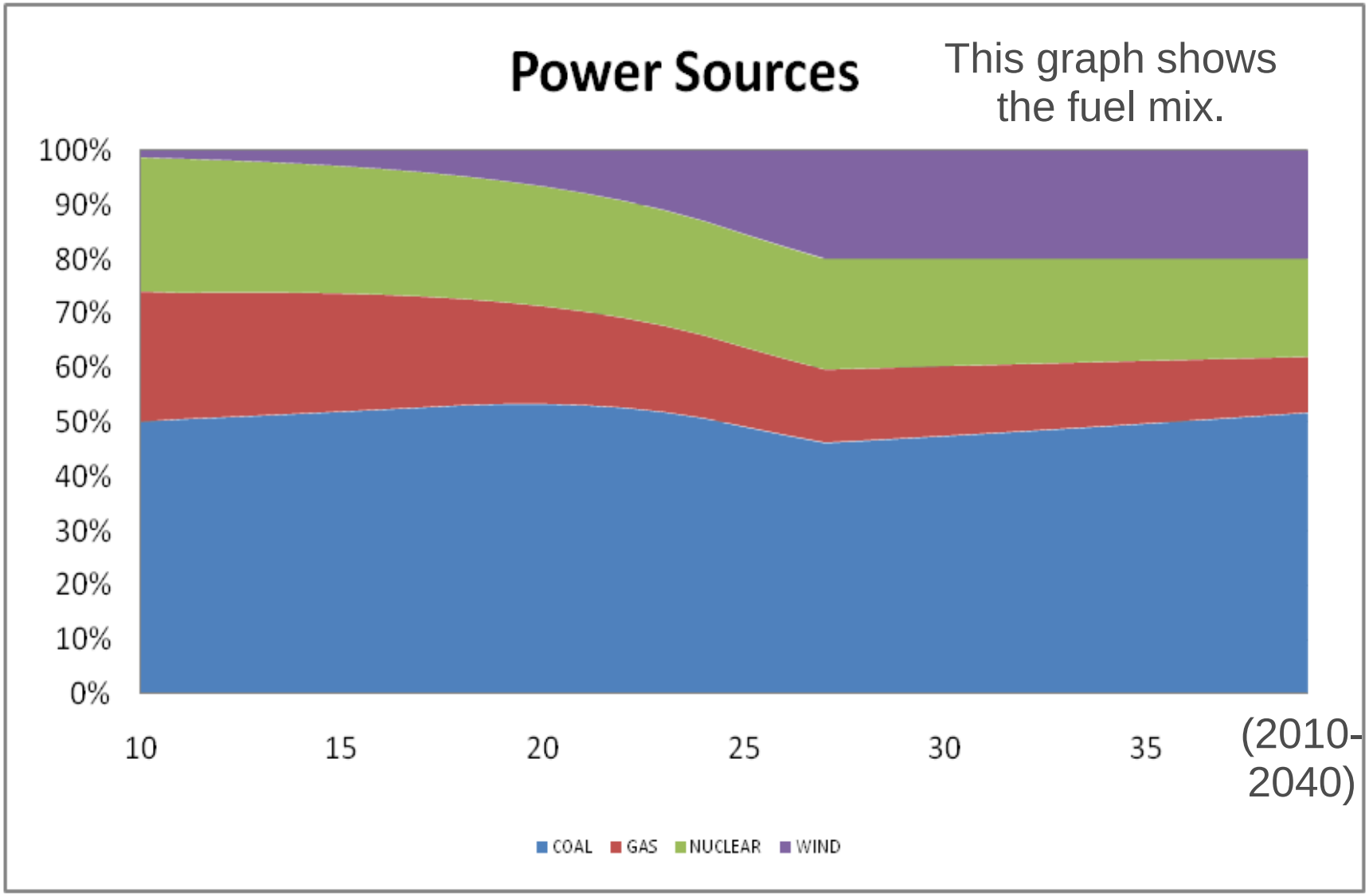
Coal and oil 21,000–50,000

Nuclear 25,000–60,000

Data are for plants that draw and dump water; plants with cooling towers use less.

Source: Webber, 2008.

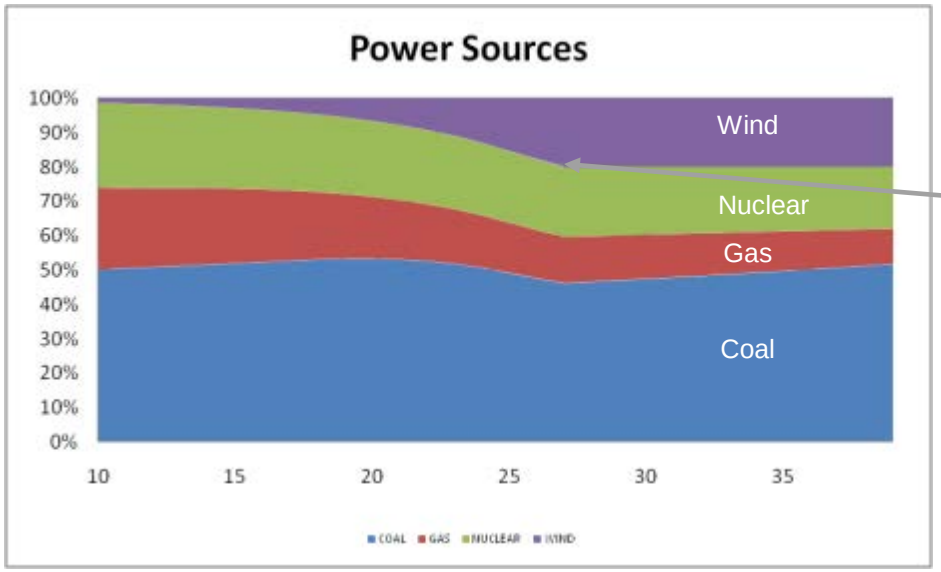
CNA Energy-Water Mini-model



CNA

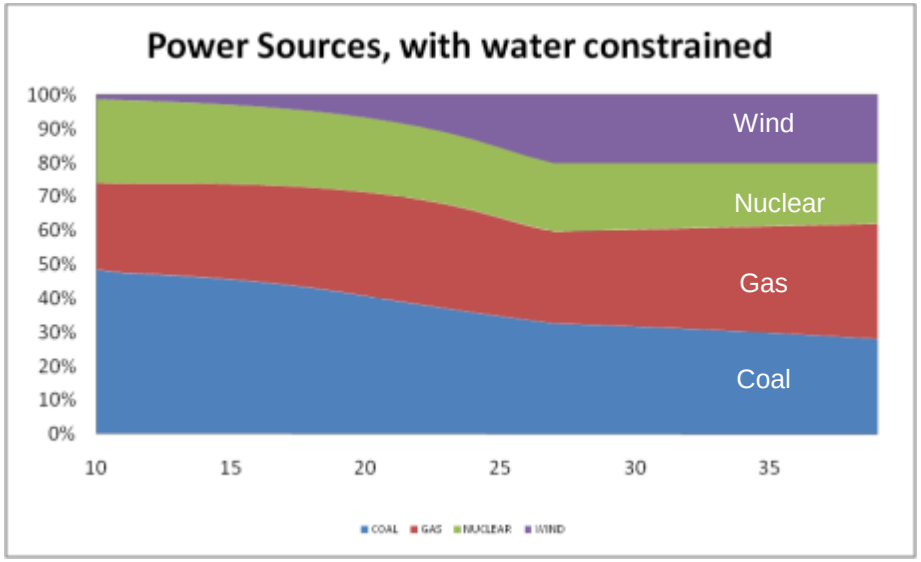
U.S. Fuel mix, w/o & w/ water constraint

If water is constrained, the fuel mix will change to favor options that use less water.

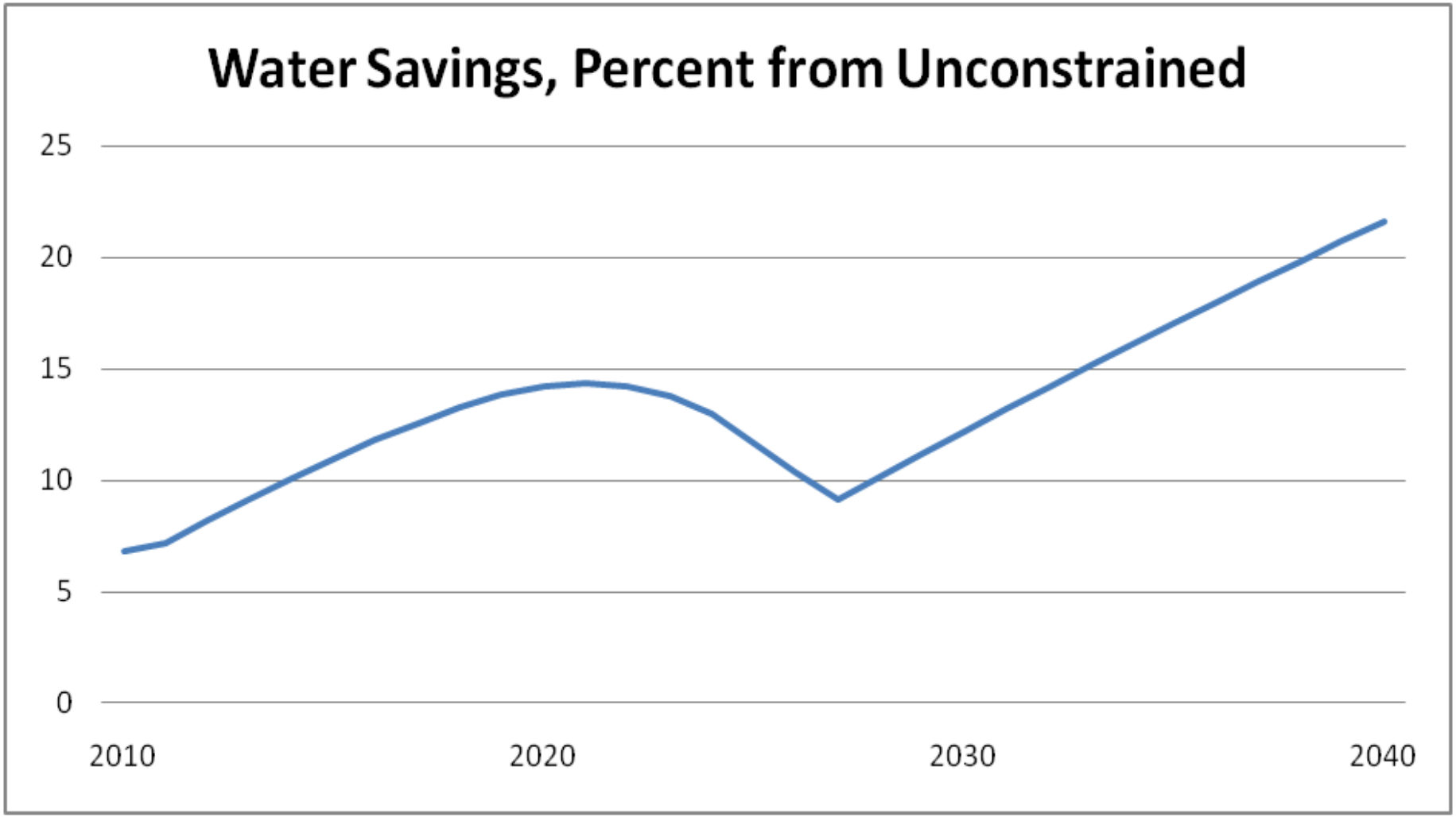


We assume a 20% cap on wind.

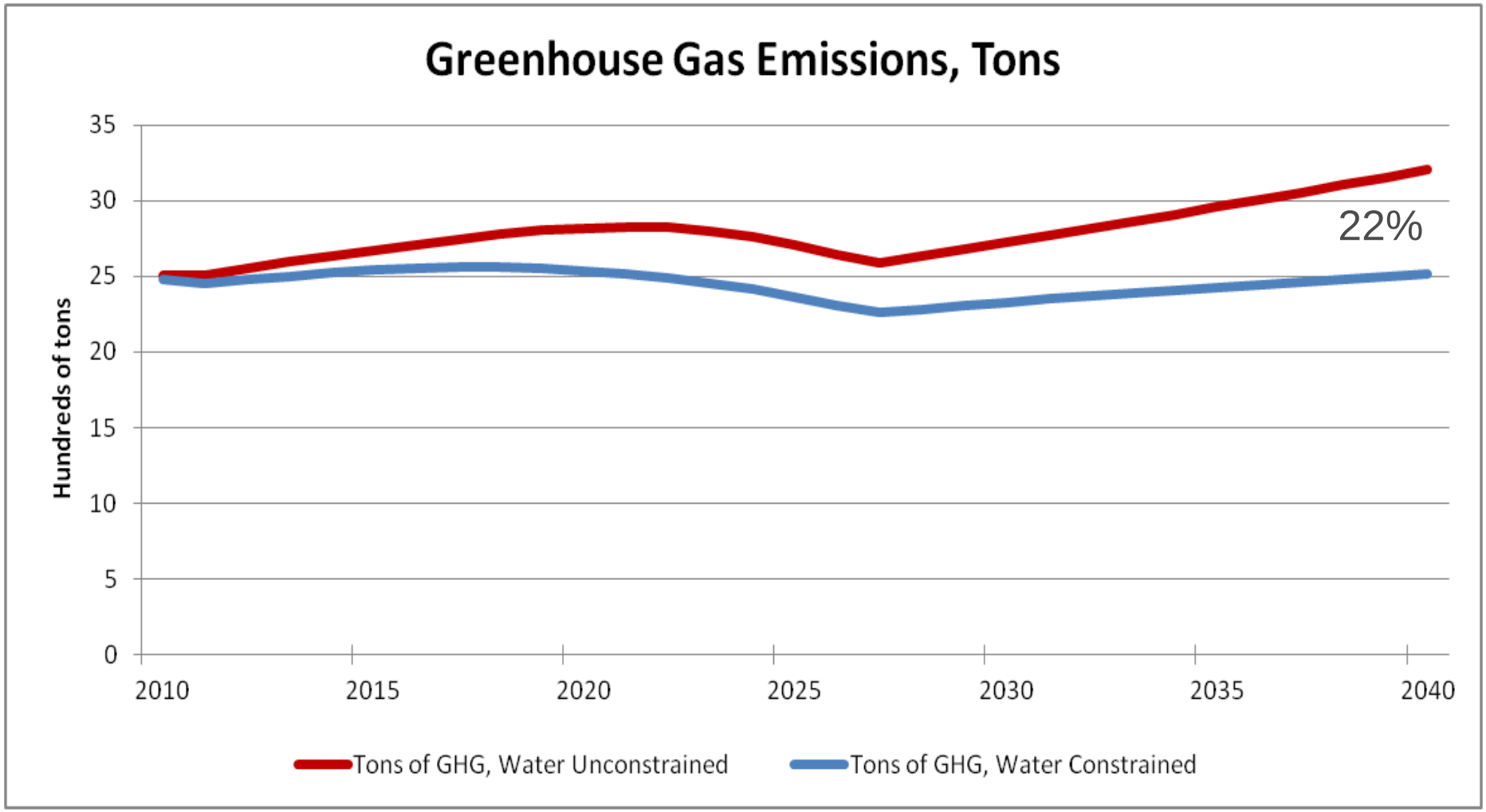
< 2010-2040



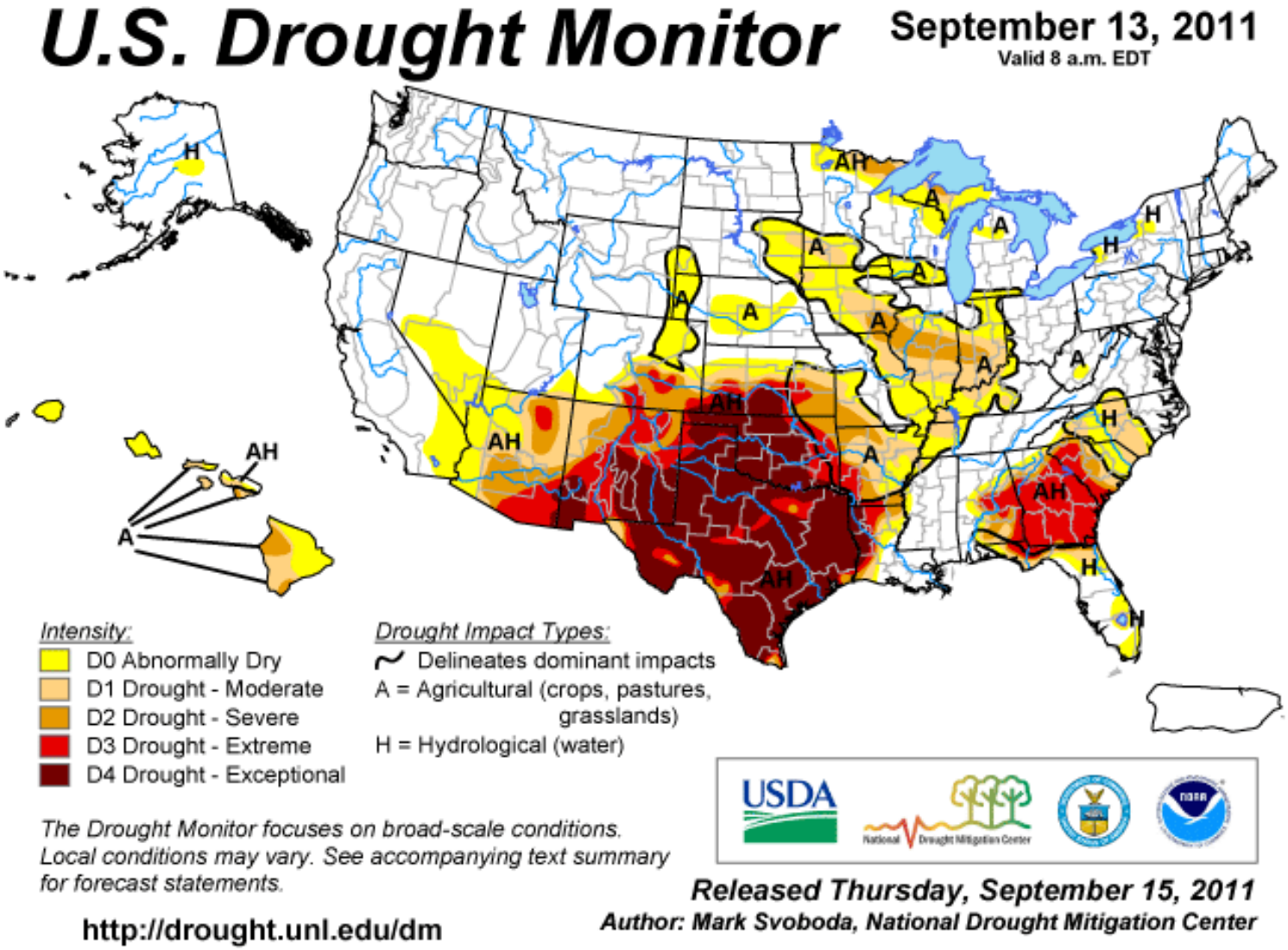
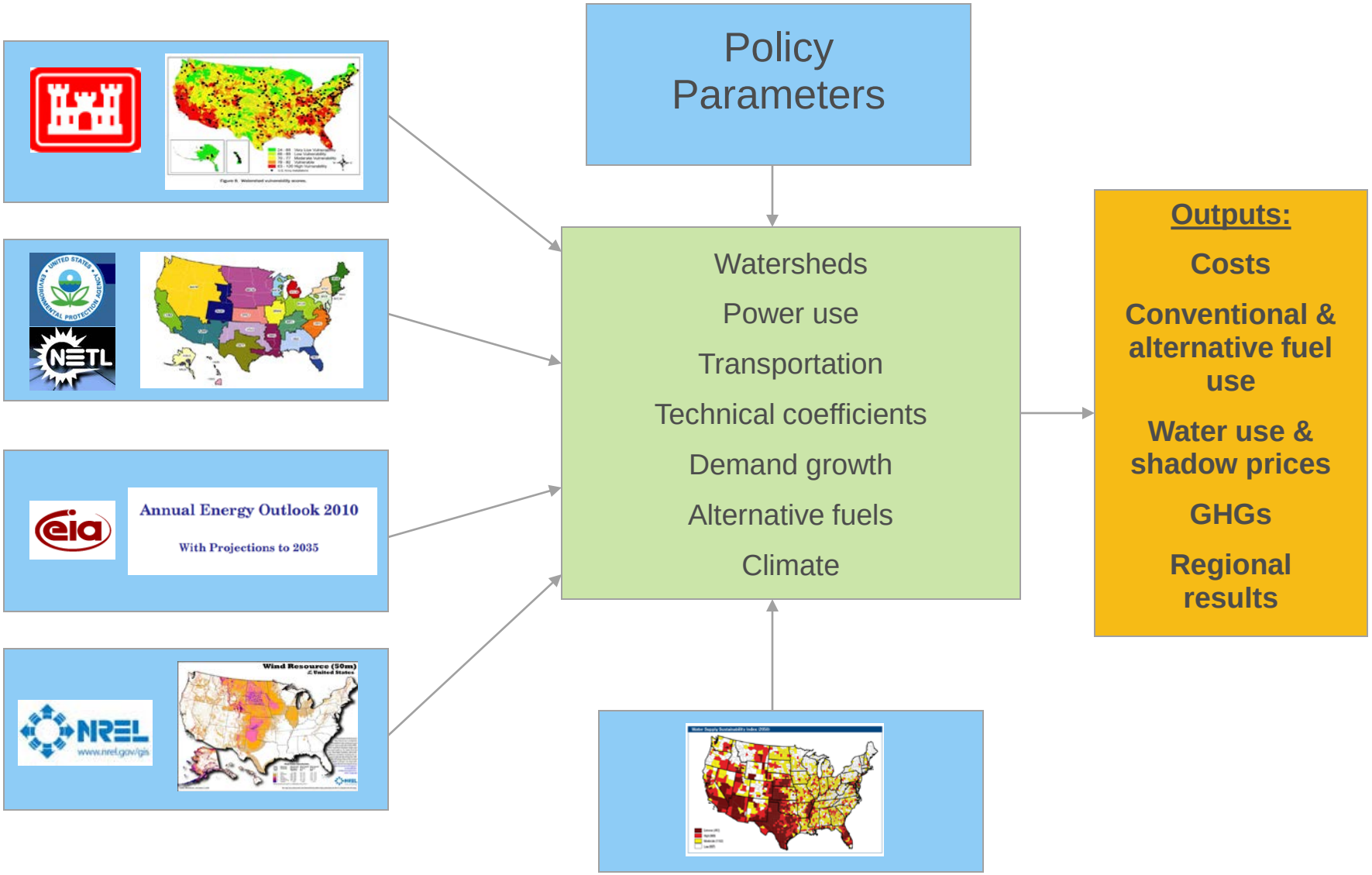
Source: Faeth, unpublished.


Water Savings, Percent from Unconstrained
25
20
15
10
5
0
2010
2020
2030
2040

CNA


Greenhouse Gas Emissions, Tons
Hundreds of tons
35
30
25
20
15
10
5
0
2010
2015
2020
2025
2030
2035
2040
22%
Tons of GHG, Water Unconstrained
Tons of GHG, Water Constrained

Drought limited power production in Texas



CNA Energy-Water Model