

Rocky Mountain National Park:

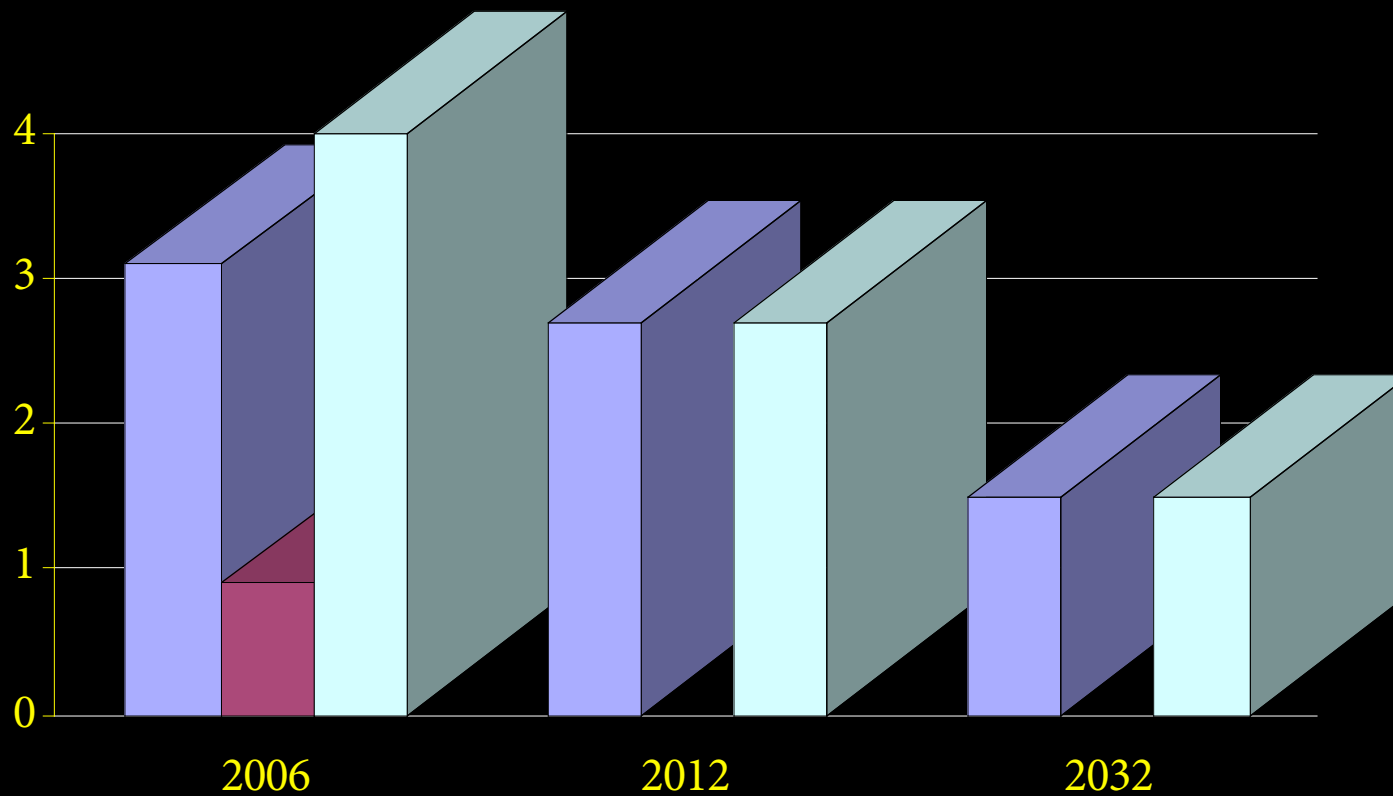
Ground Zero for a Growing Front
Range and Colorado Agriculture



The Situation in RMNP

- 400+ square miles; 350 miles of trails; 3 million visitors per year
- NADP and CASTNET wet- and dry-deposition data in RMNP suggest an increased N load over the past several decades
- Current total deposition ($\text{NH}_3 + \text{NO}_3^-$) is on the order of $4 \text{ kg ha}^{-1} \text{ yr}^{-1}$
- Major ecosystem shifts detected in high alpine watersheds

RMNPI “Glidepath”



■ Wet Deposition (NADP) ■ Dry Deposition (CASTNET) ■ Total Deposition

Main Ecosystem Shifts

- NO_3^- enrichment of surface water; changes in aquatic plant species
- Advances by grasses and sedges at the expense of wildflower flora
- Long-term N accumulation in soils
- Elevated N in spruce tree chemistry
- Pound for pound, *NH_3 impact greater than NO_3^- impact*

RMNP Initiative Goals

- 25-year plan to reduce N deposition in RMNP
- Current rate estimate $4 \text{ kg ha}^{-1} \text{ yr}^{-1}$
- $1.5 \text{ kg ha}^{-1} \text{ yr}^{-1}$ wet deposition goal by 2032; thought to be threshold for ecosystem changes
- Interim goal of $2.7 \text{ kg ha}^{-1} \text{ yr}^{-1}$ by 2012
- “Glidepath” approach relies on voluntary emissions reductions
- Contemplates changes in NO_x component of regional haze SIP