# Baseline scenarios and variation

To drive the calculations, a baseline scenario was constructed for each county. Creation of these baselines centered around the information provided in enterprise budgets, and were supplemented with interviews and publicly available data when needed (see supplemental material for details). In total, over 60 parameters were needed to run the analyses. We conceptually separated variation in estimates due to uncertainty in the true value of a given parameter (e.g. the nitrogen content of alfalfa roots), and variation due to ranges in production contexts (e.g. irrigation water well depth), choices (e.g., alfalfa seeding rate), and weather-derived uncertainty (e.g., stand life). We refer to the former as ‘uncertainty’, and the latter as ‘sensitivity’. To assess both uncertainty and sensitivity, baseline parameters were varied

##### Table X. Summary of approach to uncertainty, sensitivity, and scenario analyses

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| Parameters tested to assess **uncertainty** in results stemming from methodology choices |
| Asssumed fuel requirements for given types of passes (minimum and maximum reported in database)  IPCC nitrous oxide production (inclusion/omission of plant-derived nitrogen contribution)  Conversion factors (used values from three separate sources) |
| Parameters tested to assess **sensitivity** of results to variation in contextual conditions |
| Fertilizer credit for subsequent crop (inclusion/omission)  Alfalfa seeding rate (±20%)  Irrigation well depth (Tulare only; surface to 1500 feet)  Amount of irrigation water applied (±20%)  Type of irrigation system (70-85% efficiency)  Irrigation pump pressure (25-50 psi)  Fertilizer used (inclusion/omission)  Stand life (increased by one-third)  Dry matter harvested per year (±20%)  Insecticide application (inclusion/omission)  Herbicide application (inclusion/omission) |
| **Scenarios** explored by changing one or more parameters |
| Worst-case irrigation (deep well, high pump pressure, inefficient irrigation)  Best-case irrigation (surface water, gravity fed)  Deficit irrigation  Electrified harvesting equipment  Electric tractor for spraying and fertilizer application operations  Electric irrigation pump  Drip irrigation infrastructure to replace production irrigation flood/sprinkler systems  Various carbon credit payments through California Healthy Soils |

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