STEP 2: Conduct dynamic modeling to develop an array of target loads.

Work with research scientists, FS Air Specialists, or contractors familiar with your ecosystems (and critical loads) to determine the most appropriate dynamic model for your situation. Some of the dynamic models used for developing TLs (based on CLs of acidity) are:

- *Model of Acidification of Groundwater In Catchments (MAGIC) for surface water acidification and soils,*
- *Very simple dynamic model (VSD) for terrestrial ecosystems,*
- *PnET-BGC for both surface water and terrestrial ecosystems,*
- *DayCent for western terrestrial and aquatic ecosystems.*

Examine the data required by the model before deciding to proceed. Although the exact requirements will vary with the selected model, water chemistry, soil and/or soil solution chemistry, soil mineralogy, meteorological data, foliar chemistry, biomass information, and deposition scenarios will likely be required. Recognize that additional data may need to be collected in order to conduct the dynamic modeling exercise. FS Air Specialists should coordinate with air regulators to ensure appropriate deposition scenarios are used.

Agree on parameters for the dynamic modeling exercise including the time frames to consider, chemical/biological endpoints, and deposition scenarios. FS Air Specialists should work with the research scientist or contractor conducting the modeling to agree on the parameters for the dynamic modeling exercise, perhaps after consultation with line officers and other technical specialists.

- *Here is an example of what these decisions might look like for dynamic modeling of surface water acidification:*
  - *Time Frame: Provide hindcast for surface water chemistry (e.g., ANC) to 1860 (preindustrial pollution levels) and forecast to 15, 50, and 100 years into future.*
  - *Chemical/biological endpoints or thresholds: Use a critical water chemistry threshold (e.g., ANC= 50 ueq/L), and bracket this threshold by adding endpoints (e.g., ANC = 0, 20, and 100 ueq/liter).*
  - *Deposition scenarios: Project future deposition based on emissions and dispersion modeling including estimates from air regulatory State Implementation Plans, as well as estimates with reductions aggressive enough to ensure ecosystem recovery.*

Produce a target load table and graphs to show achievability of recovery by different dates (for an example see Sullivan et al. 2011). Ideally the dynamic modeling results and TLs would be published in peer-reviewed literature.

With dynamic modeling results in hand, proceed to Step 3.