Appendix 5B

Updated Glide Path Analysis for Regional Haze

Updated Glide Path Analysis for Regional Haze (DRAFT)

This memo provides updated information on the measured and model-projected visibility levels for the Class I areas in northern Michigan and Minnesota. Specifically, four additional years of measured data (2005-2008) and one recent air quality modeling analysis were considered in preparing new plots of the glide paths for these Class I areas. This memo supplements the LADCO Technical Support Document ("Regional Air Quality Analyses for Ozone, PM2.5, and Regional Haze: Final Technical Support Document", April 25, 2008)[1], which summarized the air quality analyses conducted by LADCO and its contractors to support the development of State Implementation Plans (SIPs) for ozone, PM2.5, and regional haze in the States of Illinois, Indiana, Michigan, Ohio, and Wisconsin.

Monitoring Data: A summary data set of the mean values for the best 20%, middle 20%, and worst 20% visibility days for the period 1988-2008 was obtained from the IMPROVE website: http://vista.cira.colostate.edu/IMPROVE/Data/IMPROVE/summary_data.htm
The values were calculated using the revised (new) IMPROVE algorithm. It should be noted that the baseline values were determined using 2000-2004 data, in accordance with the Regional Haze Rule.

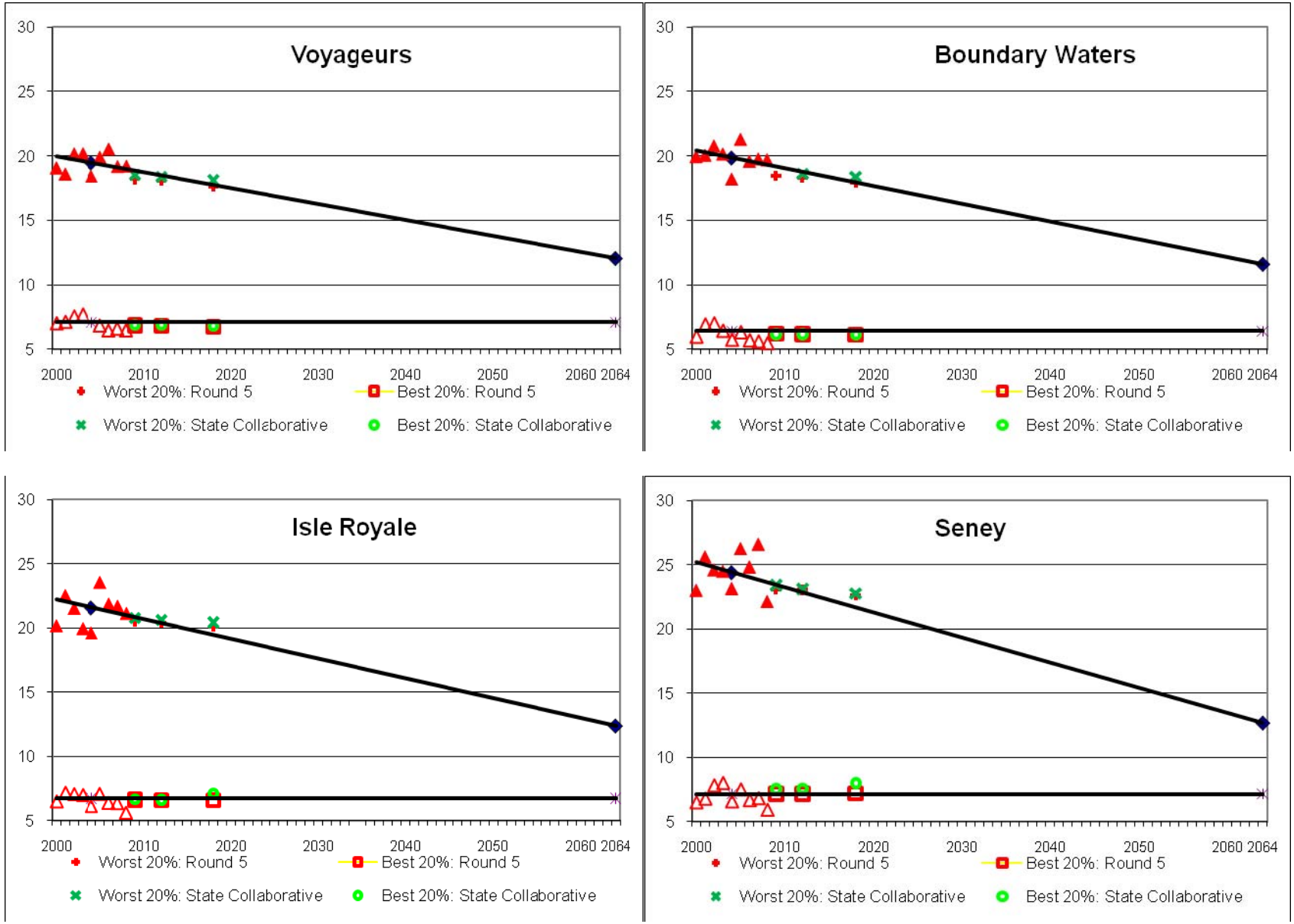
Modeling Data: Two sets of future year model predictions were considered:

(1) Round 5.1 results for 2009, 2012, and 2018 (using EPA's IPM-based projections of EGU growth and the original CAIR rule) – see "Regional Air Regional Air Quality Analyses for Ozone, PM2.5, and Regional Haze: Final Technical Support Document", April 25, 2008
(2) State Collaborative results for 2009, 2012, and 2018 (using an alternate EGU growth methodology and planned/expected EGU controls) – see "Regional Modeling for the Easter U.S.: Technical Support Document", July 9, 2009

A major difference between these modeling analyses is the assumed level of EGU control. LADCO's Round 5.1 modeling reflects full implementation of EPA's Clean Air Interstate Rule (CAIR), and the State Collaborative modeling recognizes the CAIR remand and reflects only planned/expected EGU controls. Not surprisingly, with lesser control, the State Collaborative modeling shows less visibility improvement. In light of the uncertainty due to the CAIR remand, however, the projections, particularly for the farthest out year – 2018, are suspect.

Results: Figure 1 provides updated glide path plots for Voyageurs and Boundary Waters in Minnesota, and Isle Royale and Seney in Michigan. There are insufficient data to establish any clear trends, but it is encouraging that measured visibility levels for the most recent 2 – 3 years have improved in three of the four Class I areas (and, furthermore, are on the glide path). In preparation for the first 5-year progress report (due in December 2012), this analysis will be updated on a periodic basis as more measured data become available (e.g., 2009 – 2011 data), and as more modeling is conducted (e.g., new SIP analyses).

[1] The memo also supplements the summary of technical information of regional haze and visibility impairment in the northern Michigan and Minnesota Class I areas: "Regional Haze in the Upper Midwest: Summary of Technical Information", Version 2.2, February 22, 2008.



The top line in each figure represents visibility values for the 20% worst days and the bottom line for the 20% best days. The black diamonds in the top line are the baseline value (2000-2004 average) and the natural conditions value (2064).