Simulations of lower-hybrid coupling in the Madison Symmetric Torus\footnote{Work supported by Oak Ridge National Laboratory} JOHAN CARLSSON, DAVID SMITHE, Tech-X Corporation, MARK CARTER, Oak Ridge National Laboratory, MICHAEL KAUFMAN, University of Wisconsin-Madison — An analysis will be presented of radio-frequency (RF) coupling with the inter-digital line slow-wave antenna used for lower-hybrid (LH) heating and current drive at 800 MHz in the Madison Symmetric Torus (MST) reversed-field pinch (RFP). The primary simulation tool was the VORPAL code, but MicroWave Studio and RANT3D/AORS1D-II were also used. Due to the special requirements of the RFP configuration (tight-fitting conducting shell in which only minimal portholes are acceptable to maintain MHD stability), the unusual interdigital line antenna was chosen. Accessibility in MST requires a very large parallel wave number $k_{\parallel}$, with $N_{\parallel} = c k_{\parallel}/\omega > 7.5$. A blind V&V exercise done in vacuum showed excellent agreement for the phase difference between the antenna rods, with VORPAL and measurement differing by only 1\degree, but with MWS deviating more. Unfortunately the phasing excites a wave with $N_{\parallel}$ approximately 10\% too small. With plasma, VORPAL gives $N_{\parallel}$ around 15\% below the accessibility limit. VORPAL simulations performed on ANL Intrepid to investigate antenna modifications to increase $N_{\parallel}$ will also be presented.