Models for predicting production performance of vertical and horizontal wells drilled in the Bakken Formation will be discussed and some results will be presented. Simple analytical models have been used in the past; however, because of the complexity of the fractured Bakken, more detailed models may be required to match well history and to give realistic predictions of future performance. The application of 3D hydraulic fracture simulation models and 3D, 3 phase dual porosity reservoir simulation models will be discussed in the context of current Bakken development activity.