This document outlines how to use the ionization fraction given by the convergence of the iterative method using the Saha equation. The intention is to direct the reader toward incorporating more elements into these calculations. This is written under the assumption the reader has read Math_Capstone_Paper.pdf

Hydrogen
The current implementation only considers hydrogen. Our calculations of pressure, internal energy, and specific heat follow the methods outlined in http://www.astro.princeton.edu/~gk/A403/ioniz.pdf

Helium
The main purpose of this document is to share the current thoughts on how to move forward and include the ionization of more elements. The method described here is not complete, however hopefully it can serve as a starting place.

Initially, we will consider pressure. The formula becomes
$$P_g = (n_H + n_{He} + n_e)kT$$
where the number of electrons is due to singly ionized hydrogen, singly ionized helium, and doubly ionized helium.