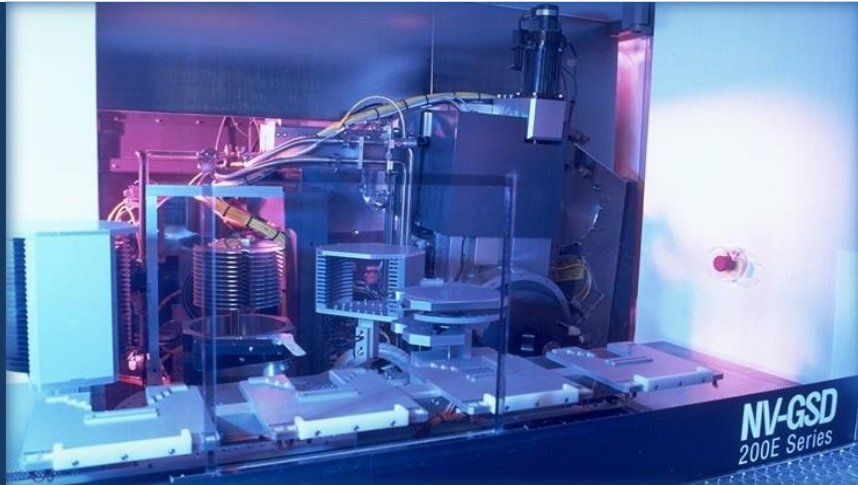


# PROJECTED RANGE STATISTICS

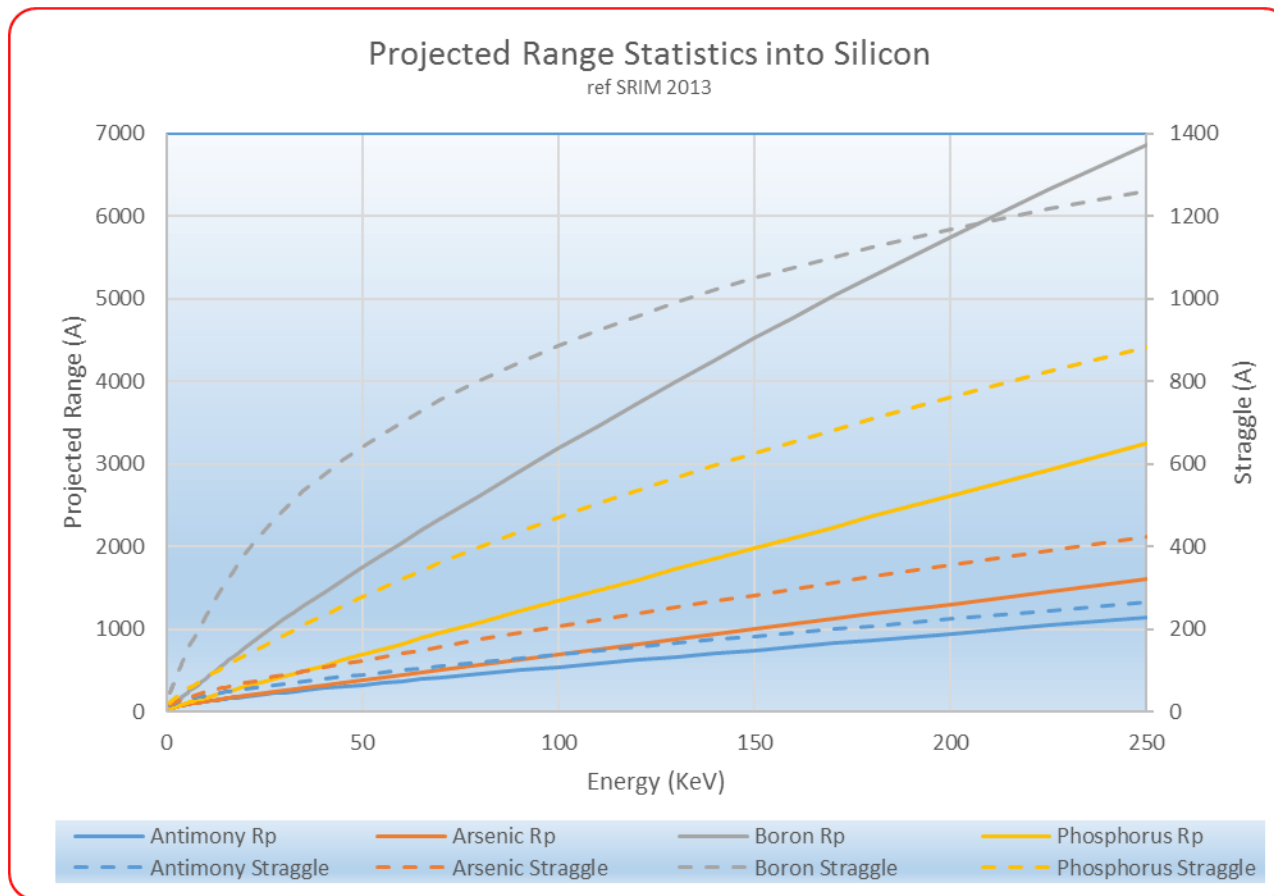


Flexibility. Expertise. Speed.  
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# PROJECTED RANGE STATISTICS

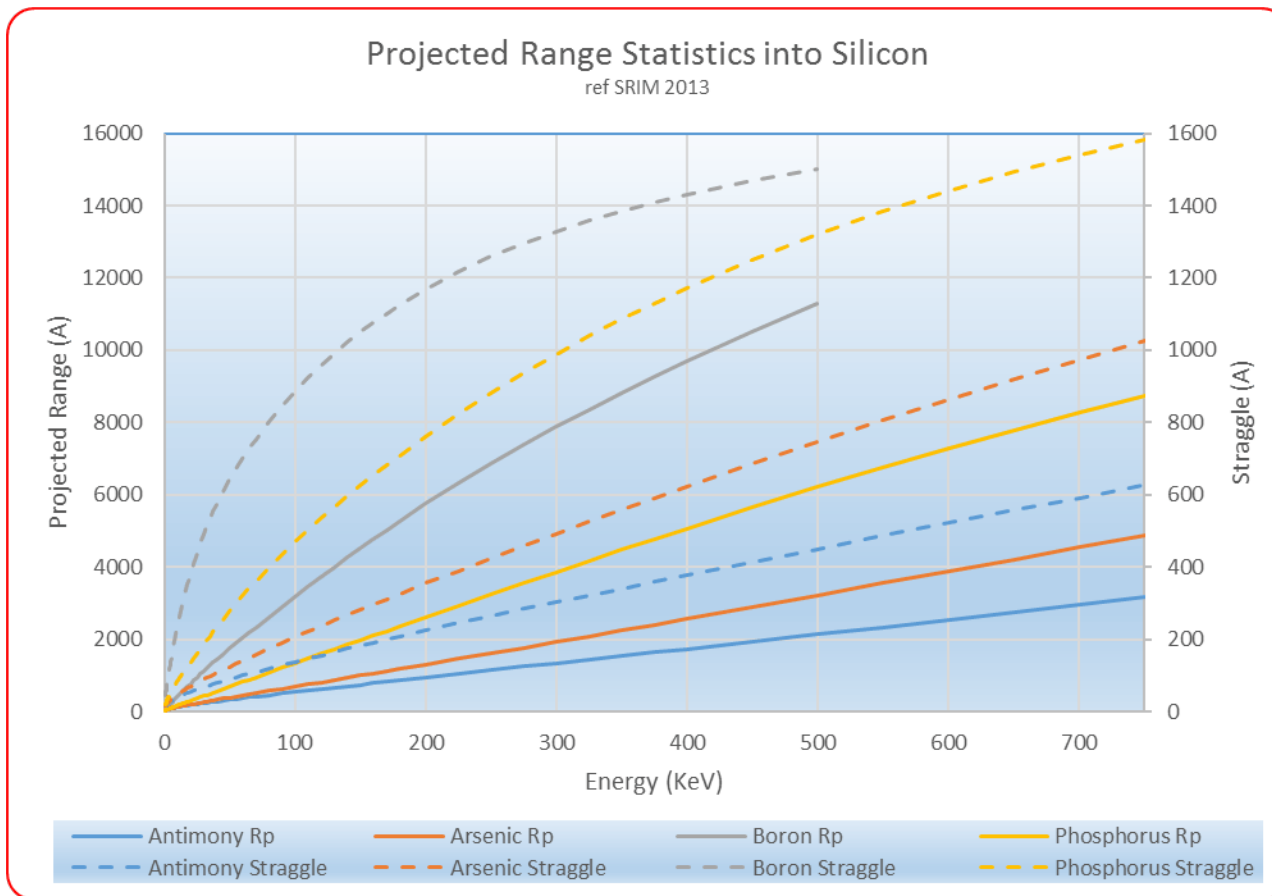
- The following graphs are based on tables generated by SRIM 2013
- SRIM is a software package originally written at IBM Research under the direction of J. F. Ziegler and J. P. Biersack
- It is currently available at no cost for noncommercial use at [www.SRIM.org](http://www.SRIM.org)
- The graphs are provided for use by any and all ion implant users
- The graphs provide Projected Range ( $R_p$ ) and Straggle ( $\Delta R_p$ ) for
  - ▶ Antimony
  - ▶ Arsenic
  - ▶ Boron
  - ▶ Phosphorus
- There are 4 sets of graphs for the following implant target materials
  - ▶ Silicon
  - ▶ Silicon Dioxide
  - ▶ Silicon Nitride
  - ▶ Resist (AZ 111)
- Each set of graphs consist of 2, one for singly charge ions and one for multiply charge ions
- In addition, there is a set of graphs recommending a minimum resist thickness
  - ▶ The recommendations are based on  $R_p + 5 * \Delta R_p$ .
  - ▶ Thicker resist may be needed for high doses that cause resist shrinkage

# PROJECTED RANGE STATISTICS INTO SILICON



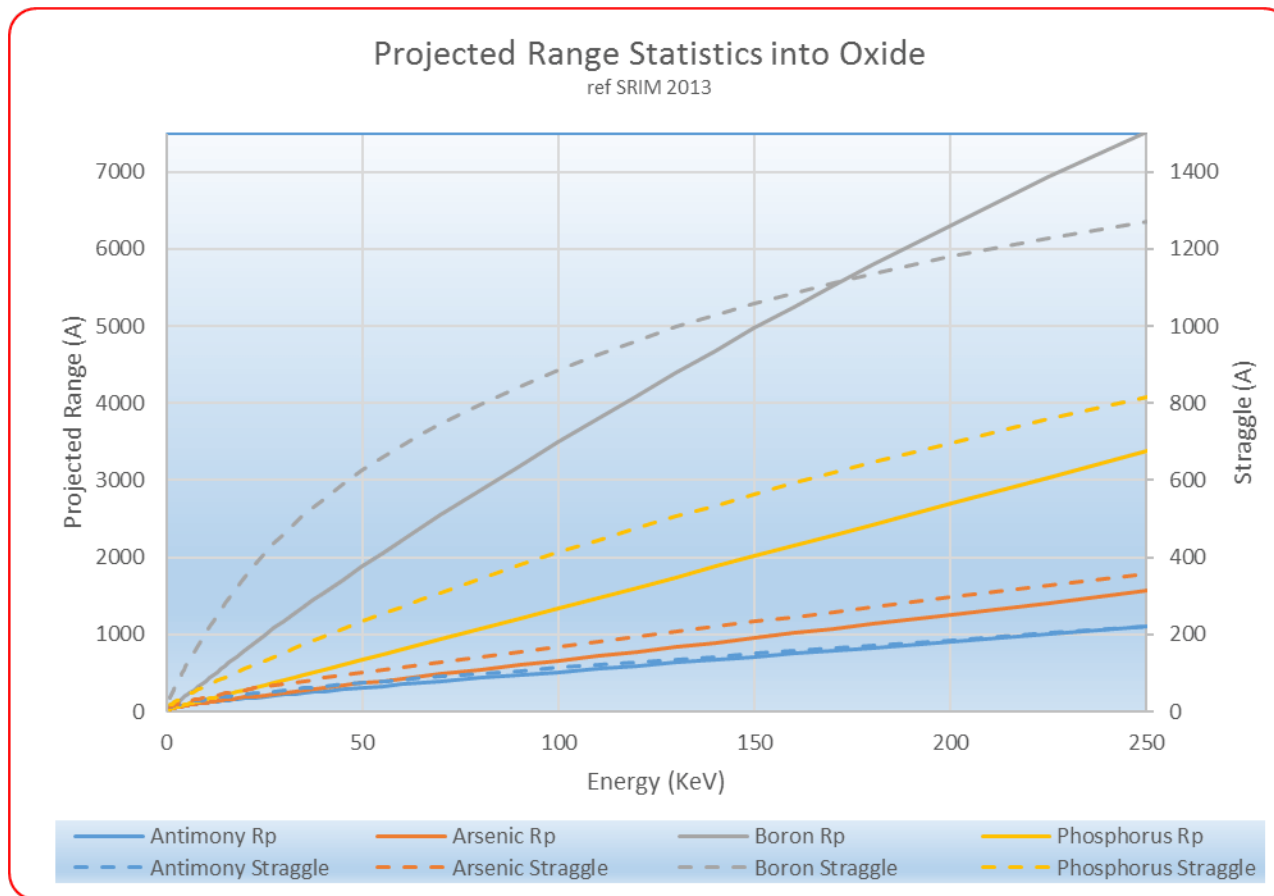
- Based on SRIM 2013 generated tables

# PROJECTED RANGE STATISTICS INTO SILICON



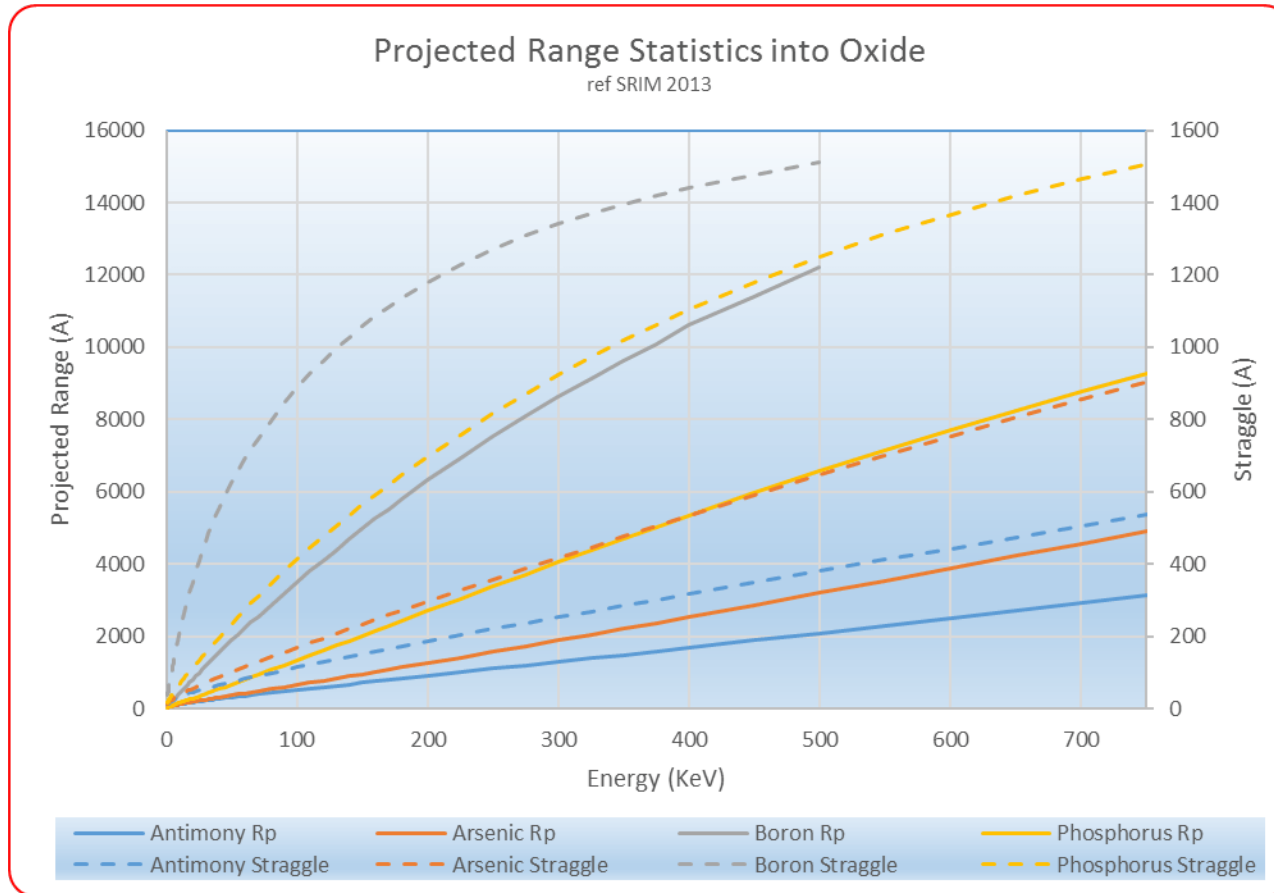
- Based on SRIM 2013 generated tables

# PROJECTED RANGE STATISTICS INTO OXIDE



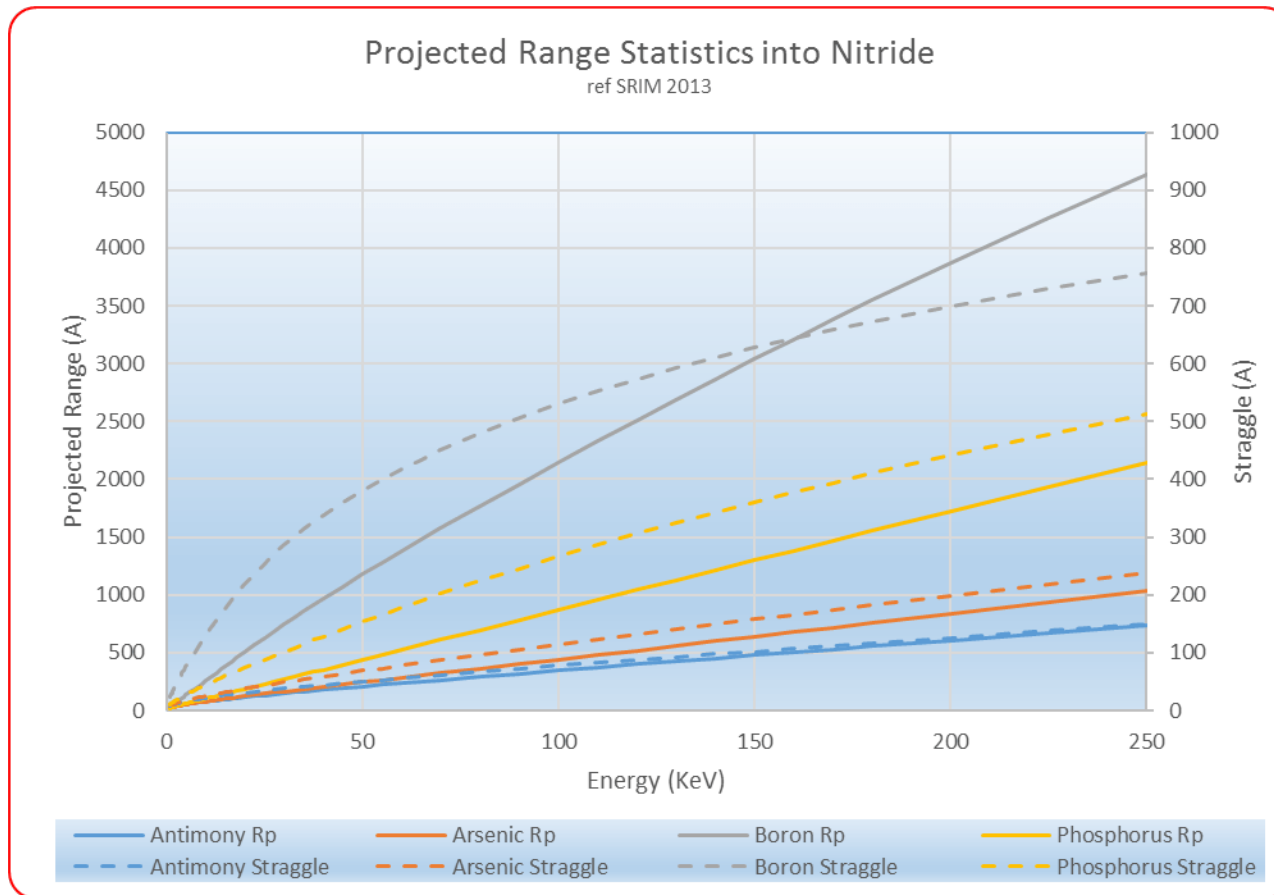
- Based on SRIM 2013 generated tables

# PROJECTED RANGE STATISTICS INTO OXIDE



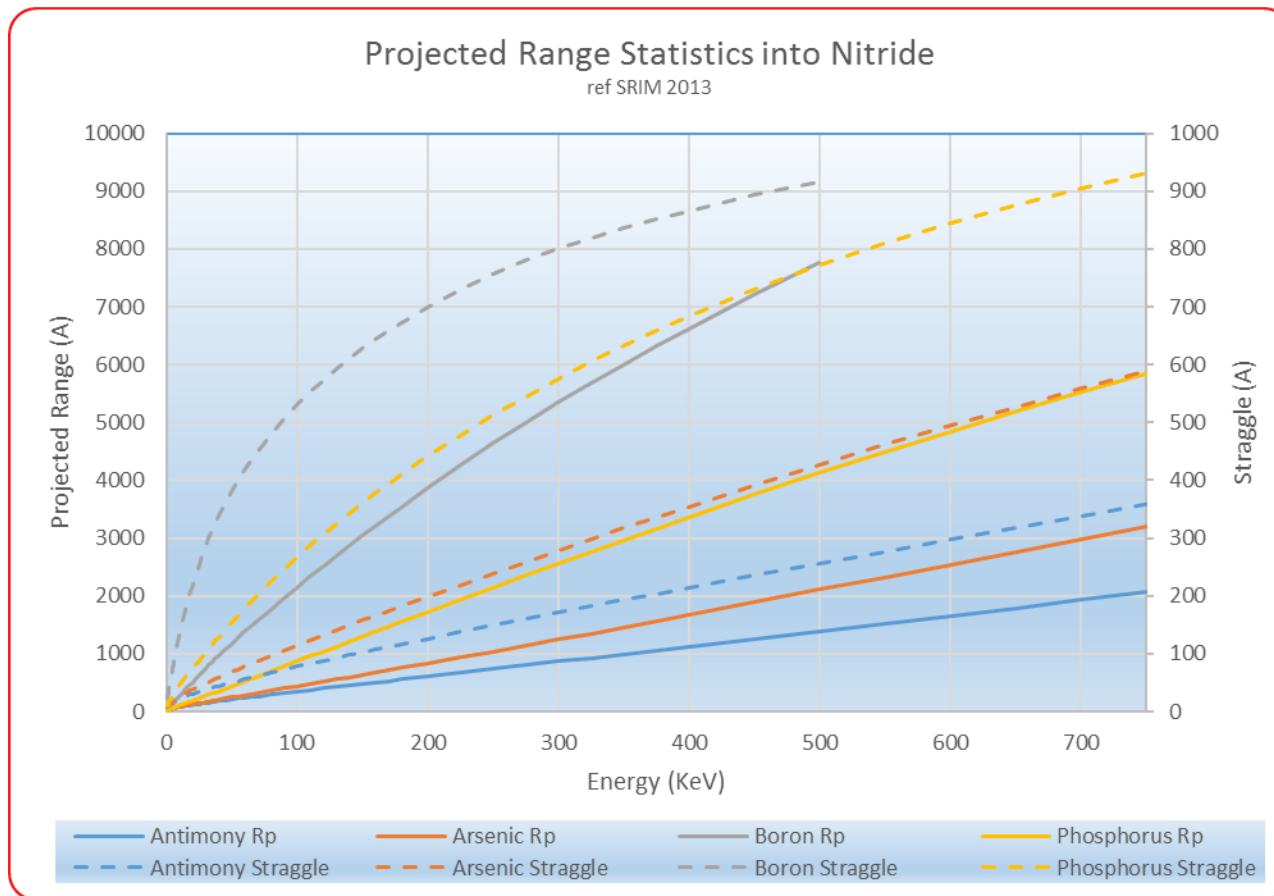
- Based on SRIM 2013 generated tables

# PROJECTED RANGE STATISTICS INTO NITRIDE



- Based on SRIM 2013 generated tables

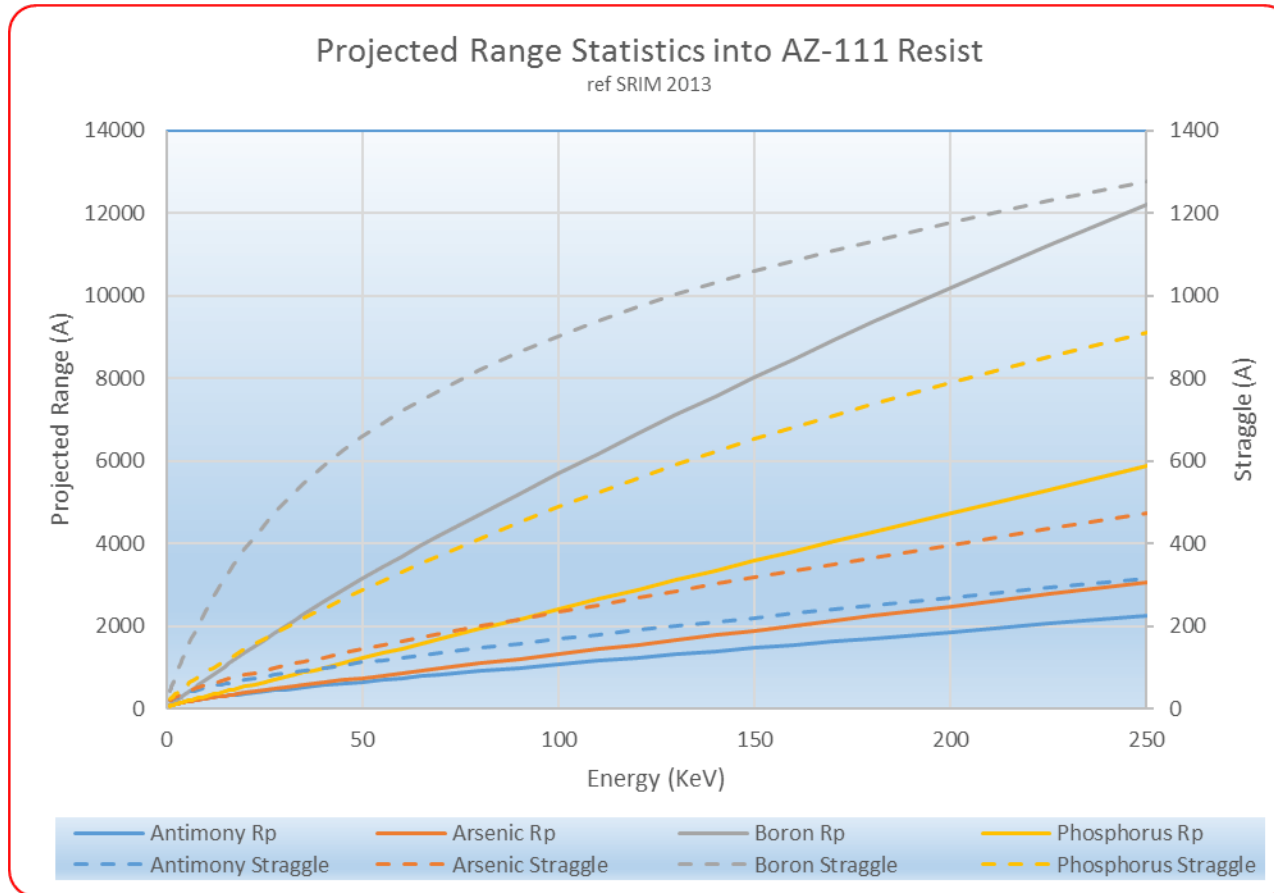
# PROJECTED RANGE STATISTICS INTO NITRIDE



- Based on SRIM 2013 generated tables

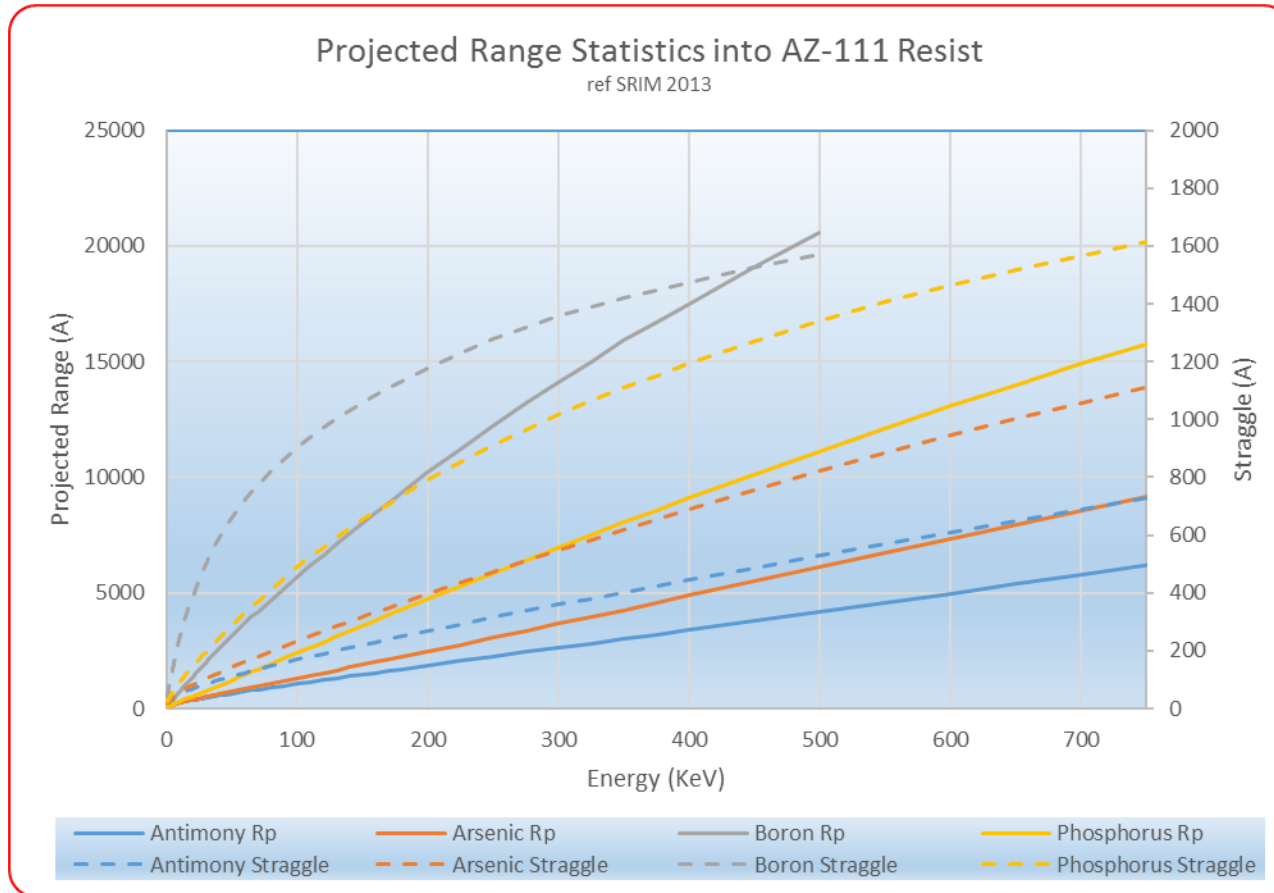


# PROJECTED RANGE STATISTICS INTO RESIST



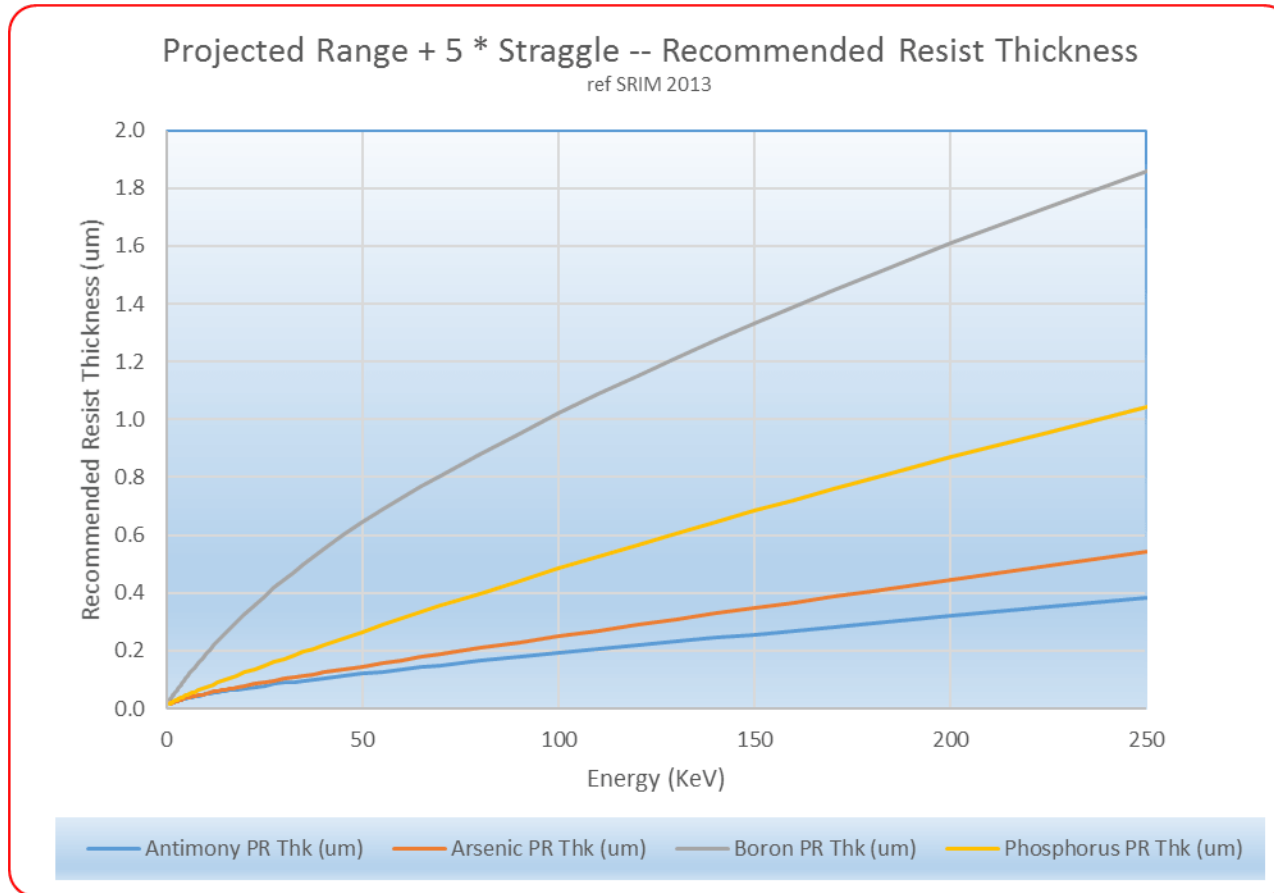
- Based on SRIM 2013 generated tables

# PROJECTED RANGE STATISTICS INTO RESIST



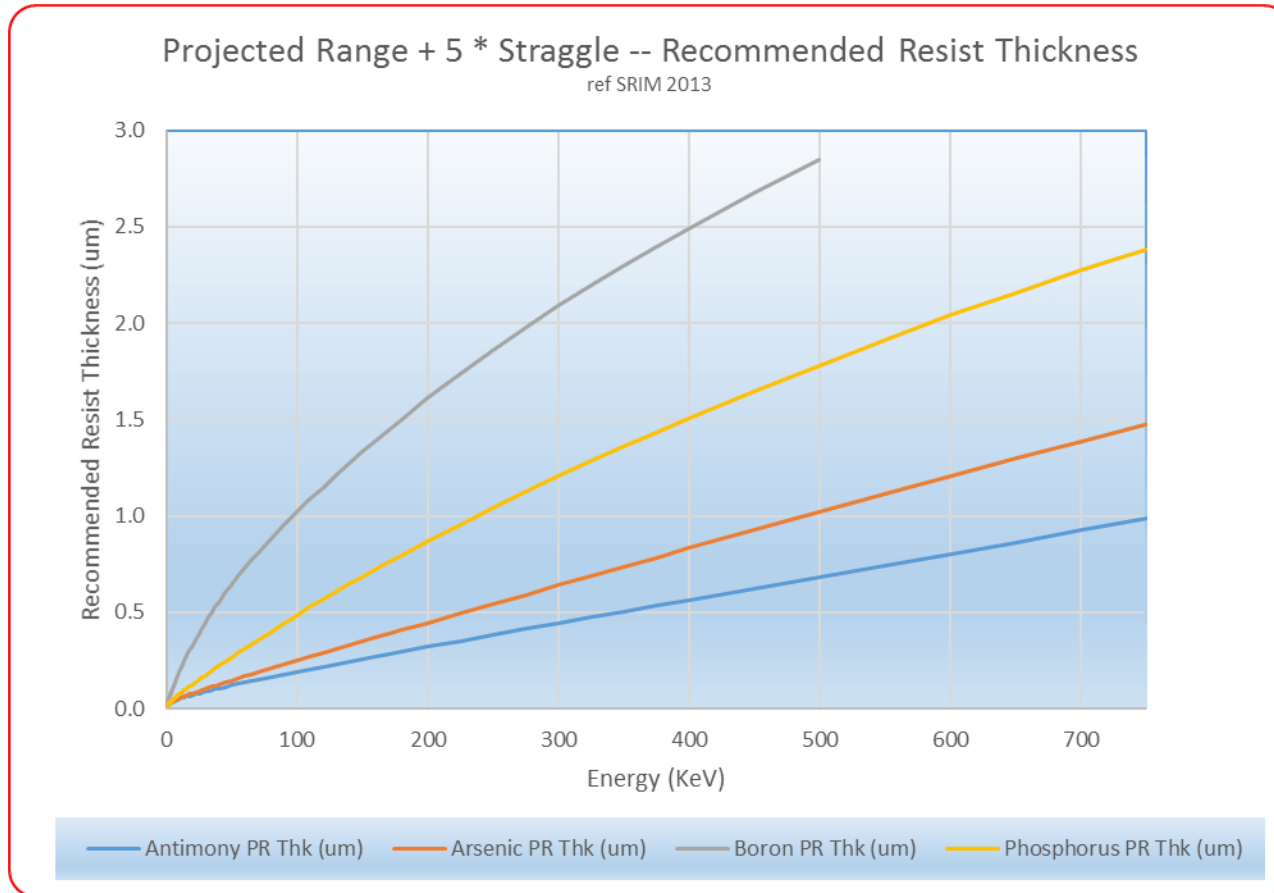
- Based on SRIM 2013 generated tables

# RESIST RECOMMENDATIONS



- Based on SRIM 2013 generated tables

# RESIST RECOMMENDATIONS



- Based on SRIM 2013 generated tables