# Nitric Acid Production Project Protocol
# Summary of Changes from V1.0 to V2.0

September 2011

- Incorporation of all errata & clarifications to V1.0 (as of March 17, 2011)
- Expanded project definition to include tertiary catalyst projects at NAPs with pre-existing NSCR (Section 2.2)
- Information added to Legal Requirement Test regarding U.S. EPA Tailoring Rule impacts on project eligibility (Section 3.4.1.1)
- Default IPCC emission factor included in tertiary catalyst project methodology updated to reflect ACM0019 (Section 5.2.2 and Appendix B)
- Organizational changes to Section 5
    - Addition of Figures 5.1 and 5.2
    - Change in order of text to reflect proper order of operations
    - Additional equations (5.1, 5.2, 5.3, 5.11), which do not affect the quantification methodology
    - Changes in terminology:
        - "Permitted operating conditions" changed to "allowable operating conditions"
        - "Campaign length" changed to "campaign production volume"
    - Renamed variables for clarity:

| V1.0 | | V2.0 | |
|---|---|---|---|
| **Variable** | **Equation** | **Variable** | **Equation** |
| $GWP_{N2O}$ | Multiple | 310 | Multiple |
| $BE_{BC}$ | 5.2, 5.3 | $N_2O_{BL}$ | 5.4, 5.5 |
| $HNO_{3,BC}$ | 5.2 | $HNO_{3,BL}$ | 5.4 |
| $V_{SGBC}$ | 5.3 | $F_{BL}$ | 5.5 |
| $NC_{SGBC}$ | 5.3 | $N_2O_{conc,BL}$ | 5.5 |
| $OH_{BC}$ | 5.3 | $OH_{BL}$ | 5.5 |
| $PE_n$ | 5.4, 5.5 | $N_2O_n$ | 5.7, 5.8 |
| $EF_P$ and $EF_n$ | 5.1, 5.5 | $EF_{P,n}$ | 5.6, 5.7 |
| $V_{SG}$ | 5.4 | $F_n$ | 5.8 |
| $NC_{SG}$ | 5.4 | $N_2O_{conc,n}$ | 5.8 |
| OH | 5.4 | $OH_n$ | 5.8 |

| | | | |
|---|---|---|---|
| $CI_{N2O,i}$ | 5.7 | $N_2O_{conc,in,i}$ | 5.11 |
| $M_i$ | 5.7, 5.9 | $OH_i$ | 5.11, 5.13 |
| $CO_{N2O,i}$ | 5.9 | $N_2O_{conc,out,i}$ | 5.13 |
| $EF_{NH3}$ | 5.10 | 2.14 | 5.14 |
| $HC_{EC}$ | 5.11, 5.12 | $CO_{2,HC}$ | 5.15, 5.16 |
| $HC_{ENC}$ | 5.11, 5.13 | $CH_{4,HC}$ | 5.15, 5.17 |
| $GWP_{CH4}$ | 5.13 | 21 | 5.17 |
| M | 5.15, 5.16 | $OH_{RP}$ | 5.19, 5.20 |
| $CL_{cap}$ | None | $CPV_{cap}$ | None |

- New variables:

| Name | Description |
|---|---|
| $HNO_{3,MAX,scaled}$ | Maximum annual average 100% concentration nitric acid production, scaled to the length of the campaign |
| $BE_i$ | Baseline emissions during interval i when the NAP is operating outside of Allowable Operating Conditions (AOC) |
| $HNO_{3,i}$ | Total nitric acid production during interval i when NAP is operating outside of AOC |
| $EF_{IPCC}$ | Default emission factor from the IPCC ($kgN_2O/tHNO_3$) |
| $OD_n$ | Number of days of operation during the project campaign |