

## **APPENDIX Q**

**DETAILED MATRIX OF THE BAAQMD REFINERIES  
CARFG2 AND RELATED CLEAN FUELS REFINERY MODIFICATIONS**

| Bay Area Refiners<br>Project Description     | CHEVRON<br>(Richmond) |      | EXXON<br>(Benicia) |      | SHELL<br>(Martinez) |      | TOSCO<br>(Martinez) |      | UNOCAL<br>(Rodeo) |      |
|--|-----------------------|------|--------------------|------|---------------------|------|---------------------|------|-------------------|------|
|  | New                   | Mod. | New                | Mod. | New                 | Mod. | New                 | Mod. | New               | Mod. |
|  | Air Separation Unit   |      |                    |      |                     |      |                     |      | X                 |      |
| Alkylation Plant                             |                       | X    |                    | X    | X                   |      |                     | X    |                   |      |
| Benzene Reduction (Saturation) Unit          |                       | X    | X                  |      |                     |      | X                   |      | X                 |      |
| Boilers                                      |                       |      |                    |      | X                   |      | X                   |      | X                 |      |
| Butamer Plant                                | X                     |      |                    |      |                     |      |                     |      |                   |      |
| Butane Isomerization Unit                    |                       |      |                    |      | X                   |      | X                   |      |                   |      |
| Butane/Butylene Selective Hydrogenation Unit |                       | X    |                    |      |                     |      |                     |      |                   |      |
| C4 Treater                                   | X                     |      |                    |      |                     |      |                     |      |                   |      |
| C5/C6 Isomerization Unit                     |                       |      | X                  |      | X                   |      |                     |      |                   |      |
| Catalytic Hydrodesulfurization (HDS)         |                       |      |                    |      |                     |      |                     | X    |                   |      |
| Catalytic Reforming Unit                     |                       |      | X                  |      | X                   |      |                     |      |                   |      |
| Cogeneration Plant                           |                       |      |                    |      | X                   |      |                     |      |                   |      |
| Cooling Tower                                | X                     |      |                    |      | X                   |      |                     |      |                   | X    |
| Depropanizer                                 |                       | X    |                    |      |                     |      |                     |      |                   |      |
| Debutanizer                                  |                       | X    |                    |      |                     |      |                     |      |                   |      |
| Deisobutanizer Column                        |                       | X    |                    |      |                     |      |                     |      |                   |      |
| Deisopentanizer                              |                       |      |                    |      |                     |      |                     |      |                   | X    |
| Distillate Hydrotreater                      |                       |      |                    |      | X                   |      |                     |      |                   |      |
| Distillation Unit                            |                       |      |                    |      | X                   |      |                     |      |                   |      |
| FCC Feed Hydrotreater                        |                       |      |                    |      |                     |      | X                   |      |                   |      |
| FCC Gasoline Hydrotreating Plant             |                       | X    |                    |      |                     |      |                     |      |                   |      |
| FCC Hydrodesulfurization Unit                |                       |      |                    |      |                     |      | X                   |      |                   |      |
| Flare System                                 |                       | X    |                    |      | X                   |      |                     | X    |                   |      |
| Fluid Catalytic Cracking Unit (FCCU)         |                       | X    |                    |      |                     |      |                     |      |                   |      |
| Gas Plant Fractionator                       |                       |      |                    |      |                     |      |                     | X    |                   |      |
| Gasoline Blender                             |                       |      |                    |      |                     |      |                     |      |                   | X    |
| Gasoline Hydrotreater                        |                       |      |                    |      | X                   |      |                     |      |                   |      |
| Hydrocracker                                 |                       |      |                    | X    |                     |      |                     | X    |                   |      |
| Hydrogen Plant                               |                       |      |                    | X    | X                   |      |                     | X    | X                 |      |
| Hydrogen Recovery Plant                      |                       | X    |                    |      |                     |      |                     |      |                   |      |
| Isomerization Unit                           |                       |      |                    |      |                     |      |                     |      |                   | X    |
| Light Cracked Gasoline Treater               |                       |      |                    |      | X                   |      |                     |      |                   |      |
| LPG Sphere                                   | X                     |      |                    |      |                     |      |                     |      |                   |      |
| Methanol Feed Tank                           |                       |      | X                  |      |                     |      |                     |      |                   |      |
| Mid-Barrel Treater                           |                       |      | X                  |      |                     |      |                     |      |                   |      |
| MTBE Process Unit                            |                       |      | X                  |      |                     |      |                     |      |                   |      |
| Naptha Hydrodesulfurization Unit             |                       |      |                    |      |                     |      | X                   |      |                   |      |
| Pentane Isomerization Unit                   |                       |      |                    |      |                     |      | X                   |      |                   |      |
| Process Wastewater System                    |                       |      |                    |      |                     |      |                     |      |                   | X    |
| Reformate Splitting Column                   | X                     |      |                    |      |                     |      |                     |      | X                 |      |
| Selective Catalytic Reduction (SCR)          |                       |      | X                  |      |                     |      |                     |      |                   |      |
| Selective Hydrogenation Unit                 |                       |      |                    |      |                     |      | X                   |      |                   |      |
| Storage Tanks                                | X                     |      | X                  |      | X                   |      | X                   |      | X                 |      |
| Sulfur Plant                                 |                       | X    |                    |      | X                   |      |                     |      |                   |      |
| Tertiary Amyl Methyl Ether (TAME) Plant      | X                     |      |                    |      |                     |      | X                   |      |                   |      |