Orbital Sets for Hybridized Row 2 Atoms

| Atom's Hybridization | Orbital Sets |  |  |  | Geometry |
| :---: | :---: | :---: | :---: | :---: | :---: |
| unhybridized | $\begin{gathered} \mathrm{s} \\ \text { (spherical) } \end{gathered}$ | P (two equal lobes) | $\begin{gathered} \mathrm{P} \\ \text { (two equal lobes) } \end{gathered}$ | $\begin{gathered} \mathrm{P} \\ \text { (two equal lobes) } \end{gathered}$ | ------ |
| $\begin{gathered} \text { sp }^{3} \\ \text { (four sp3 orbs) } \end{gathered}$ | $\begin{aligned} & \mathrm{sp}^{3} \\ & \text { (one lobe larger } \\ & \text { than the other) } \end{aligned}$ | $\begin{aligned} & \mathrm{sp}^{3} \\ & \text { (one lobe larger } \\ & \text { than the other) } \end{aligned}$ | $\begin{aligned} & \mathrm{sp}^{3} \\ & \text { (one lobe larger } \\ & \text { than the other) } \end{aligned}$ | $\mathrm{sp}^{3}$ <br> (one lobe larger than the other) | Tetrahedral <br> (109.5 ${ }^{\circ}$ ) |
| $\mathbf{s p}^{2}$ <br> (three sp2 orbs and one p orb) | $\begin{gathered} \mathrm{sp}^{2} \\ \text { (shorter/rounder } \\ \text { than } \mathrm{sp}^{3} \text { ) } \end{gathered}$ | $\begin{gathered} \mathrm{sp}^{2} \\ \begin{array}{c} \text { (shorter/rounder } \\ \text { than } \mathrm{sp}^{3} \text { ) } \end{array} \end{gathered}$ | $\begin{gathered} \mathrm{sp}^{2} \\ \begin{array}{c} \text { (shorter/rounder } \\ \text { than } \mathrm{sp}^{3} \text { ) } \end{array} . \end{gathered}$ | P <br> ( $\Pi$ bond or lone pair) | Tri. Planar <br> ( $120^{\circ}$ ) |
| sp <br> (two sp orbs and two porbs) | ```sp (shorter/rounder than \(\mathrm{sp}^{2}\) )``` | ```sp (shorter/rounder than sp}\mp@subsup{}{}{2}``` | P <br> ( $\Pi$ bond or lone pair) | P <br> ( $\Pi$ bond or lone pair) | Linear <br> ( $180^{\circ}$ ) |

