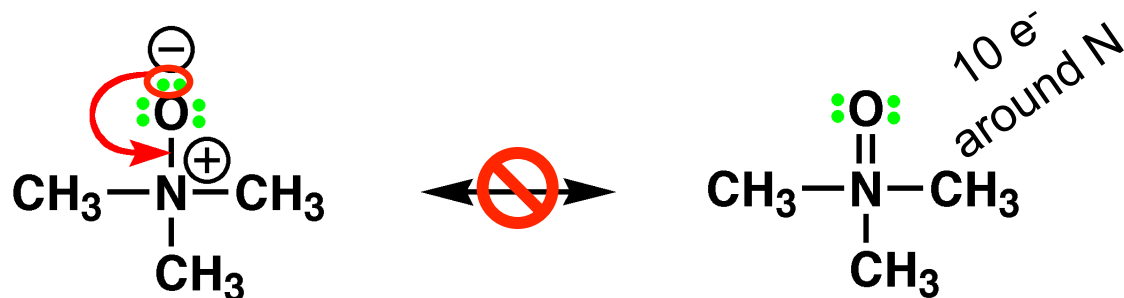
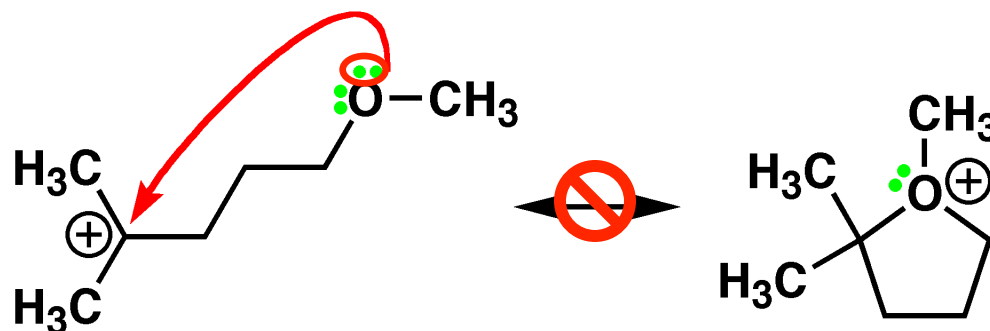


# The Rules of Resonance Contributors

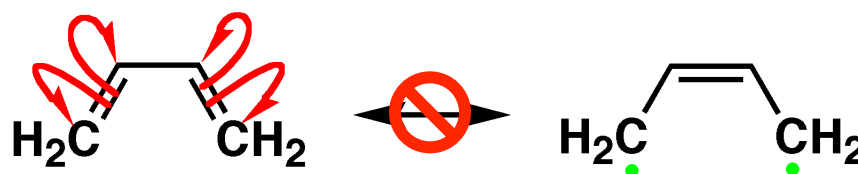
1. Must be a bona fide Lewis structure



2. The positions of the nuclei must be the same



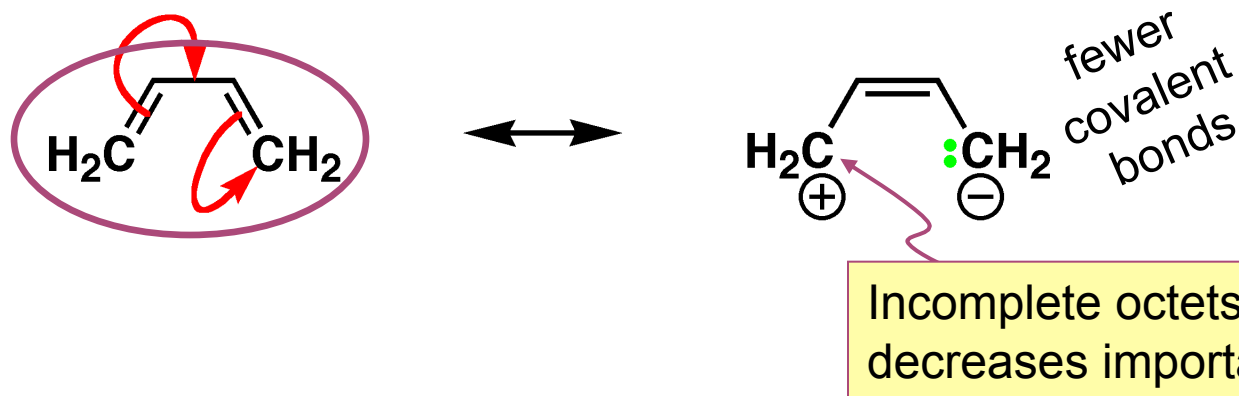
3. The number of unpaired electrons must not change



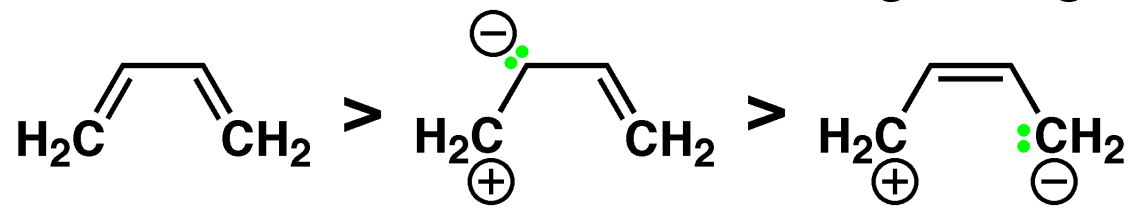
# Important Resonance Contributors Will Have Comparable Energies

Guidelines to help determine the importance of possible resonance contributors.

(a) The more covalent bonds, the greater the importance

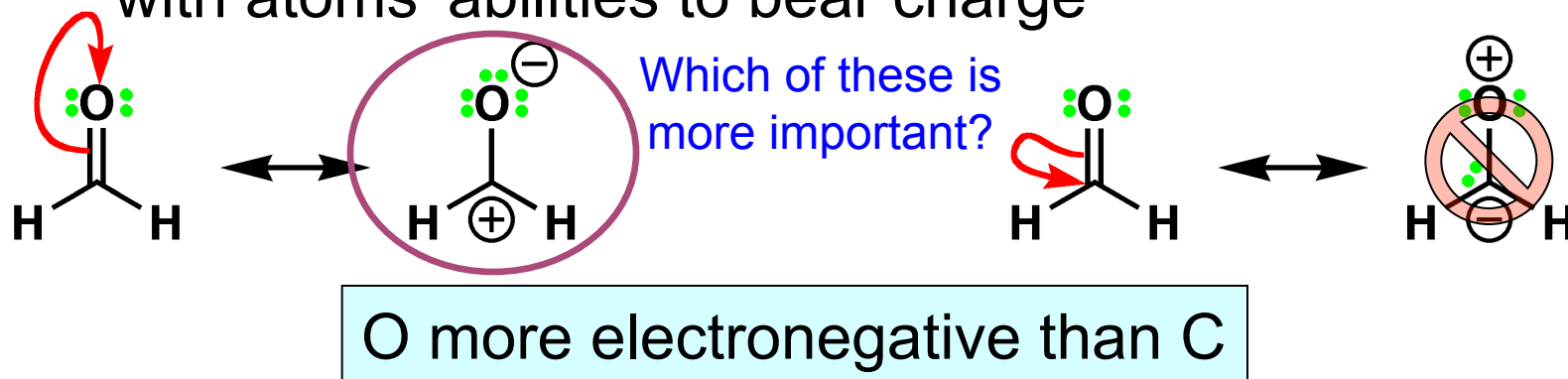


(b) Importance decreases with increasing charge separation

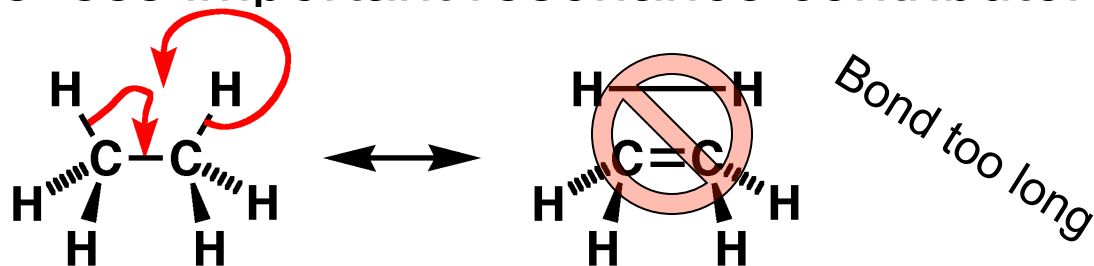


# The Relative Importance of Resonance Contributors

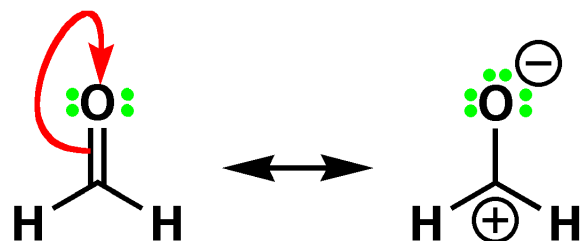
(c) Charged structures should be drawn consistent with atoms' abilities to bear charge



(d) Structures with distorted bond angles or bond lengths are less important resonance contributors



# Resonance Contributors - Summary



Resonance contributors are alternative descriptions of a molecule based on the redistribution of electrons

- (1) The true electronic description of a compound is the weighted average (i.e., **hybrid**) of the different resonance contributors. The weight assigned to each contributor is a measure of its importance to the description of the compound. The dominant resonance contributor is that which is most heavily weighted.
- (2) Resonance contributors provide a description of how charge and electron density are distributed in a molecule (i.e., which atoms are electron deficient and which are electron rich).
- (3) Important information about reactivity will often be revealed in the **second best resonance contributor**. Watch for this trend to emerge during your studies.