HW 3 (due Mon 9/24)  
EE 553, Fall 2012, Dr. McCalley

1. Text Problem 11.1  
2. Text Problem 11.2  
3. Text Problem 11.3  
4. The loading on circuit $\ell$ is $f_{\ell}^0$. It is known that the flow on circuit $\ell$ is limited by outage of circuit $k$ under a stress condition defined by $\Delta P_i$ (e.g., a generation shift between buses $i$ and $j$, or an increase in load at bus $j$ compensated by an increase in generation at bus $i$). Determine the SOL for circuit $\ell$ expressed as a function of $f_{\ell}^0, f_{\ell}^{max}$, GSFs, and LODFs.  

Hint 1: The SOL for circuit $\ell$ occurs under the condition that

$$f_{\ell}^0 + \Delta f_{\ell} = f_{\ell}^{max}$$

where $f_{\ell}^{max}$ is the emergency overload rating for circuit $\ell$.  

Hint 2: There are two network changes that determine $\Delta f_{\ell}$.  

Hint 3: The stress condition affects both the flow on circuit $\ell$ and the flow on circuit $k$. 