Lab 2: Power Flow Calculations

ECE 433 – Power Systems Stability and Transients

# Postlab Questions

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| **Name** | **Student ID** | **CCID** | **Lab Section** |
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## Questions

#### Base Case Preparation

1. For each branch in the system are the ‘from bus’ and ‘to bus’ currents equal? In which cases are they equal and in which cases are they different? Explain why.

#### Controlling Bus Voltage with Transformer

1. In the case that a bus does not have a private feeding transformer (e.g. bus 9), so changing the transformers tap ratio is not possible, is there another way to adjust the voltage of the bus?

#### Effect of Capacitor

1. In power-flow analysis is a capacitor a reactive power source or sink?
2. What are the most noticeable changes in the system that is caused by switching off the compensation capacitor? Explain your observations.

#### Effect of Load Changes on Bus Voltage

1. What is the most significant change caused by a 50% real power load increase at one of the buses?
2. What is the most significant change caused by a 50% reactive power load increase at one of the buses?
3. Explain in your own words why the answers to the 2 previous questions are not the same.

#### Load Models

1. Are there any major differences between the power-flow results when a P+jQ load is used instead of a generator on the same bus? Explain your observations.