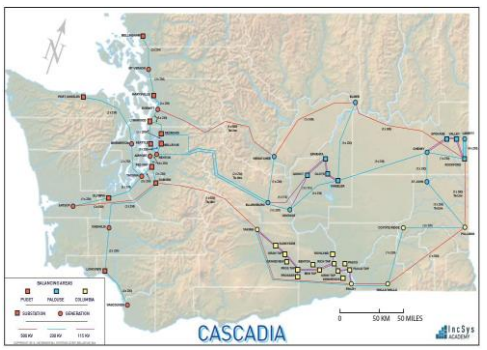
Power Transfer Distribution Factors

This is a computer-based training module which consists of a video lecture and a simulation exercise. Students watch a video lecture covering parallel path flows where they will learn about how megawatts flow along parallel paths. They will also learn how to calculate power transfer distribution factors (PTDF), and the elements that affect PTDFs. Students learn how changing MW flow can help mitigate overloaded transmissions. Students perform a simulated exercise on a hypothetical power system that teaches about PTDFs, LODFs, and controlling MW flows. Students use the hypothetical power system to build equivalent line 230kV line lengths along the major transmission lines, loops, transformers, and sets of multiple parallel lines. The equivalent line lengths are then used to calculate PTDFs for a generation shift to alleviate overloaded transmission lines following various line outage contingencies.



Cascadia 4030 Course Objectives

Power Transfer Distribution Factors

COURSE CE HOURS		
OT	STD	SIM
2	0	1.5

- Describe how MWs Flow on parallel paths.
- Define Power Transfer Distribution Factors (PTDFs).
- Describe factors that do not affect PTDFs.
- Describe factors that do change PTDFs.
- Describe methods for calculating PTDFs.
- Identify cases where opening a lower voltage path may remove an overload situation.
- Derive an electrical distance diagram where the lines are based on equivalent 230kV lines.
- Apply serial and parallel path reductions to the electrical distance diagrams with measured factors by running the Powersimulator.
- Explain the differences between the predicted and measured PTDFs using he concept of minor loop flows.
- Derive an electrical distance diagram where the line lengths are based on equivalent kV lines.
- Apply serial and parallel path reductions to the electrical distance diagrams to calculate power transfer distribution factors on different paths.
- Compare power transfer distribution factors calculated using the electrical distance programs with measured factors by running the Powersimulator.
- Explain the difference between the predicted and measured PTDFs using the concept of minor loop flows.

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