



## TIP 355: Evaluation of Technical Approaches to Increase Dynamic Transfers

### Context

High level of renewable generation integration requires expanding balancing footprint beyond a single Balancing Authority. Dynamic transfers are seen as a key enabler of expanding the balancing footprint. In 2014-15, BPA and Columba Grid conducted comprehensive system studies to determine the dynamic transfer capabilities (DTC) on California – Oregon Intertie (COI). The available DTC was nearly doubled as a result of the studies. However, there is an interest to further increase the COI DTC.

### Description

Under this project, we will evaluate various solutions to further increase the DTC on COI. Specifically, we will focus on the study tools, system reinforcements, control improvements, and situational awareness capabilities.

#### **Task 1: Review of adequacy of study tools for assessment of dynamic transfer capability in planning and operating horizons**

Under this task, we will assess how the existing study tools address the needs to study dynamic transfer capabilities.

#### **Task 2: Qualify system reinforcements that can be used to increase DTC**

Under this task, we will assess how various system reinforcements can increase COI DTC. The analysis is conceptual, and does not replace actual system planning studies.

#### **Task 3: Voltage control improvements to increase DTC**

Under this task, we will assess voltage control improvements – both at grid level and plant level – to grow DTC.

#### **Task 4: Situational Awareness Tools**

Under this task, we will discuss what system stability and performance metrics are needed to accompany any DTC increases.

#### **Task 5: Safety Nets**

Under this task, we will discuss how synchronized-wide area measurements can be used as a safety net. This work could extend the current BPA synchrophasor-based

Remedial Action Scheme (RAS) developed under BPA TIP 51-Voltage Stability.

This project is envisioned to be a multi-year work based on the roadmap that will be developed under Phase 1 of this effort. This phase will last 12 months.

### Why It Matters

Western Interconnection has very aggressive renewable portfolio standards. High levels of renewable generation integration require the expansion of the balancing footprint beyond a single Balancing Authority.

Dynamic transfers are seen as a key enabler of expanding the balancing footprint. COI dynamic transfers are of particular interest to link renewable resources and balancing resources in California ISO and Pacific Northwest.

### Goals and Objectives

The project evaluates various solutions to further increase the DTC on COI. Specifically, we will focus on:

- What study tools are needed to study DTC both in planning horizons and near real-time operations
- What system reinforcements can be deployed to address voltage stability and customer voltage fluctuations issues
- What control improvements can be implemented to improve voltage stability and reduce customer voltage fluctuations
- What situational awareness capabilities are needed for system performance monitoring

### Deliverables

The final report will contain a technology roadmap for future research topics to increase Dynamic Transfer Capability on the California–Oregon Intertie.

# Technology Innovation Project



*Project Brief*

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**Project Start Date:** October 1, 2015

**Project End Date:** September 30, 2016

### **Funding**

Total Project Cost: \$75,000

BPA FY2016 Budget: \$75,000

### **Reports & References**

### **Links**

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### **Participating Organizations**