# Valuing Ecosystem Functions in the Columbia River Treaty

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Berkeley, California, April 28, 2017

# Main Points

- Ecosystem function is recognized as a potential value by both Entities
- Challenge is to place monetary values on key ecosystem functions
- Changing climate and hydrology will affect values over time
- Three possible scenarios to establish values
- Suggest 5-10 year negotiated bundles for managing floods, hydro power and ecosystem functions

# ACT Studies

- Basin wide value of ecosystems functions
  - Anadromous fish
  - Regulation of air, water and soil quality
  - Recreation and cultural values
- Total in the billions of dollars annually
- Current Treaty focus on flood control and hydro power potentially forgoes access to significant ecosystem values
- Both Entities should undertake research on shared ecosystem values in upcoming negotiations

# Ecosystem Values

- Anadromous fish
  - Existence values
  - Commercial values
  - Proxy value equals total expenditures to date of $700 million per year or $13 billion over past decade
- Irrigation water
  - Market value of incremental water supply
- Recreation
  - Fresh water sport fishing
  - Reservoir based recreation

# Values of Avoiding 5% Losses

- Value of specific ecosystems functions assuming that coordinated storage releases from Canada avoid a 5% loss of each function
- Fish: $ 100 million per year
- Irrigation: $ 72 million per year
- Recreational fisheries:  $ 15 million per year
- Present Canadian Entitlement: $150-200 million per year

# Ecosystem Functions in Play

- Change in flood control agreement
  - opens up flexibility for Canada
  - Reduces flexibility for the US
- Canada can consider ways to reduce ecosystem costs
  - Mid Arrow option
  - Regulation of lake Kookanoosa
- Science program should include valuing ecosystem functions over time based on various climate change scenarios

# Three Scenarios

- Hydro power proxy values (status quo)
  - Reduction in maximum potential value of power generation to protect ecosystems functions
- Measured benefits and costs of ecosystem functions
  - Real estimates of incremental benefits and costs in power, irrigation, fisheries, recreation, avoided flood risks and other ecosystem functions
- Negotiated bundles of services
  - 5-10 year agreements based on existing science
  - Monitor results of past agreements to inform negotiations for next agreement period