Clean Energy BC's
OPERATIONS WORKSHOP

Thursday June 13 2019
Hyatt Regency, Vancouver
www.cleanenergybc.org
Operations Workshop: Water Breakout
The Operator’s Role of Environmental Monitoring

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Outline

1. Operating Parameters and Procedures Report (OPPR)
2. Operational Environmental Monitoring Plan (OEMP)
3. Flow Compliance Monitoring (IFR & Ramping)
4. Sediment Management
5. Maintenance vs. Repairs vs. Upgrades
6. The Duty to Record and to Report
7. Stewardship Opportunities
What is an OPPR?  
Why is it important?

- Needed for Licence to Operate
- Details *Project Specific* requirements for environmental monitoring, instream flow requirement, and ramping rates
Operators and the OEMP

When are consultants working instream?
Opportunities for adaptive management supported by scientific data?
When is the monitoring period complete?
Minimum Instream Flow Requirement

- Can vary seasonally
- Continuous monitoring
- Violations trigger reporting to MFLNRORD
- Fish stranding searches → notify DFO if stranding is confirmed.
What is flow ramping: Run-Of-River Hydrology

Start-Up

Discharge

14:00 18:00 22:00 2:00 6:00 10:00

- Downstream of Intake
- Downstream of Powerhouse
- Operating Flow

Shut-Down

Discharge

6:00 8:00 10:00 12:00

- Downstream of Intake
- Downstream of Powerhouse
- Operating Flow

Powerhouse

Tailrace

Downstream Reach

Upstream Reach

Headpond

Diversion Intake Weir

Penstock/Tunnel
Why Ramping Occurs

For hydropower generation ramping occurs during:

- Change in plant flow
  - Start-up, shut-down, or load changes
- Changes in gate, weir and valve settings
- Filling penstock or headpond
- Lag time between water passing through penstock vs the diversion reach
- “Natural” stage changes
  - Rain events, diurnal melt, avalanche, slides, log jams, ice dams...
Monitoring
Monitoring Compliance

- **Ramping Rate** measured as the maximum stage decrease over the past hour at compliance gauge

- **Rule 1 The Exceedance Rule**
  - Are the criteria exceeded

- **Rule 2 The Dewatering Rule**
  - Out of compliance for 10 min

- **Rule 3 The Wetted History Rule**
  - Have fish colonized the margins
  - Requires site specific data
Sediment Management

- Mimic natural sediment movement
- Plan sediment management activities in accordance with OPPR
- Managing Headpond infilling
- Monitoring and reporting
Maintenance vs Repairs vs Upgrades

- Asset management and maintenance
- Repairs – do they require instream work?
- Upgrades – Do they involve capacity changes? Facility footprint changes?
- Permitting and Monitoring requirements will vary according to activities performed
Duty to Record and to Report

• Flow related non-compliance
  ➢ MFLNRORD Water Branch notification

• Fish stranding or isolation mortalities
  ➢ DFO notification

• Failure to record and report may result in fines and/or criminal charges
Environmental Stewardship

• Performing fish stranding searches
• Wildlife sighting logs
• Working with local Conservation Officers
• Practicing wildlife attractant management
• Public engagement opportunities
Summary

• Environmental Monitoring Continues Post OEMP Period
• Flow Compliance Monitoring is for the life of the project
• Ramping events and fish stranding must be reported to regulatory agencies
• Sediment Management is important to downstream reaches as well as for effective plant operation
• The permitting requirements to complete facility related works will vary based on the activity and the OPPR
Questions?