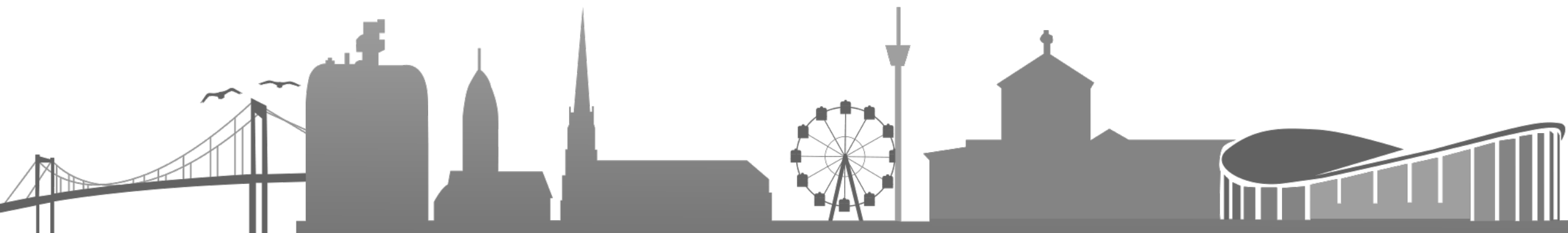




# Experience of a large dams owner in capacity building

Annick Bigras, Director Dam Safety, Hydro-Québec, Canada,  
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- ▶ **Hydro-Québec generates more than 99% of its electricity from hydro**
- ▶ **One of the largest electricity companies in Canada - Nearly 45% of all hydroelectricity in Canada**
- ▶ **Generation, transmission and distribution**
- ▶ **Its sole shareholder is the Québec government (1944 and 1963- Nationalization)**
- ▶ **61 hydroelectric generating stations**
- ▶ **681 dams, including 91 spillways and regulation works**
- ▶ **27 reservoirs with a storage capacity of 176 TWh/year**
- ▶ **Total installed capacity : ~ 37 GW**



Québec 



# 5 Dams Generation's through Years

**1st Generation  
(before 1940)**



**3rd  
Generation  
(1970-1999)**



**5th  
Generation  
(2010-2020)**

**2nd  
Generation  
(1940-1969)**



**4th  
Generation  
(2000-  
2010)**



# Regulated Framework



## *Saguenay Flood event*

- **19 to 21 July 1996**
- **Rain > 275 mm**
- **1: 10 000 Years event**
- **Considerable Damage**



## *Quebec Dam Safety Act and Dam Safety Regulation*

- **Effective since 2002**
- **Ensures Dams Safety and thereby Protect Population and their Goods**
- **Requires regularly Monitoring and Maintenance of Hydraulic Structures**
- **Specifies Construction, Modification and Operation Requirements for Dam Safety**
- **Specifies requirements for Emergency Action Plan to manage residual risks**

# Workforce



- **Highly qualified Technicians and Engineers in-house for**
  - **Diagnostic**
  - **Design**
  - **Construction**
  - **Rehabilitation**
  - **Specialised Studies**
  - **Dam Safety Review Studies**
  
- **Consultants contribute to some activities**



# Capacity building

- **Research Projects in collaboration with Universities and in our Research Center: Hydrology, Hydraulic, Geotechnic, Geology and Concrete/Structure**
- **Training in collaboration with Colleges and Universities**
- **Internships**
- **Innovative Solutions and using the newest Technology**
- **Part of many technical Committees and Interest Groups**
- **Collaboration with other Utilities**



