

ADVENTURER EXPLORER ADVENTURER TRAILBLAZER REBEL PIONEER CREATOR EXPLORER REBEL PIONEER
PIONEER CREATOR EXPLORER DEFENDER TRAILBLAZER REBEL PIONEER EXPLORER ADVENTURER TRAILBLAZER REBEL EXPLORER PIONEER DEFENDER TRAILBLAZER CREATOR

Canadian Hydrokinetic Turbine Testing Centre (CHTTC)

Public Consultation September 2012

Eric Bibeau, Mechanical Engineering,
NSERC/Manitoba Hydro Chair Alternative Energy

Faculty of Engineering



UNIVERSITY
OF MANITOBA

Questions and Answers

Public Consultation Process

Summary of Public Consultation



1. Questions and Answers on CHTTC

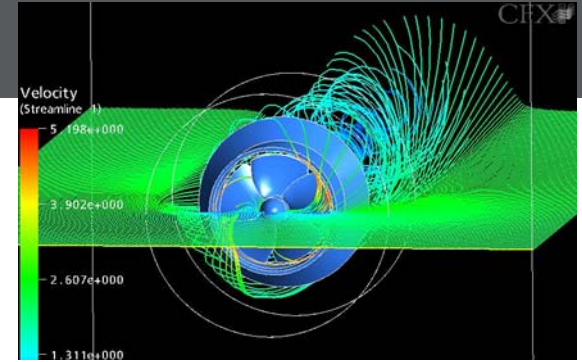


UNIVERSITY
OF MANITOBA



UNIVERSITY
OF MANITOBA

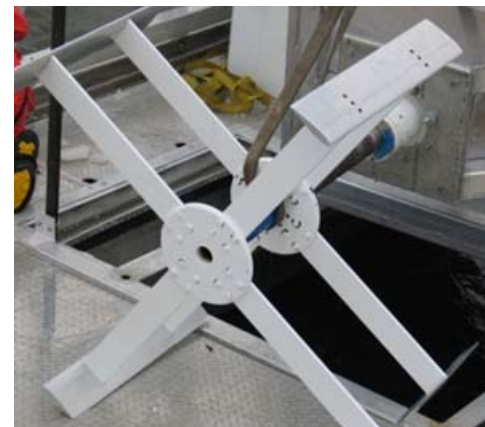
What is the focus of Canadian Hydrokinetic Turbine Testing Centre: CHTTC?



- * A facility to test hydrokinetic turbines in actual remote settings in a river year round
- * Focus on water-to-wire
- * Improve safety of turbines
- * Reduce costs
- * Simplify deployment/retrieval
- * Identify and reduce maintenance issues
- * Help Canadian industry develop this renewable energy technology for Canadian and international markets

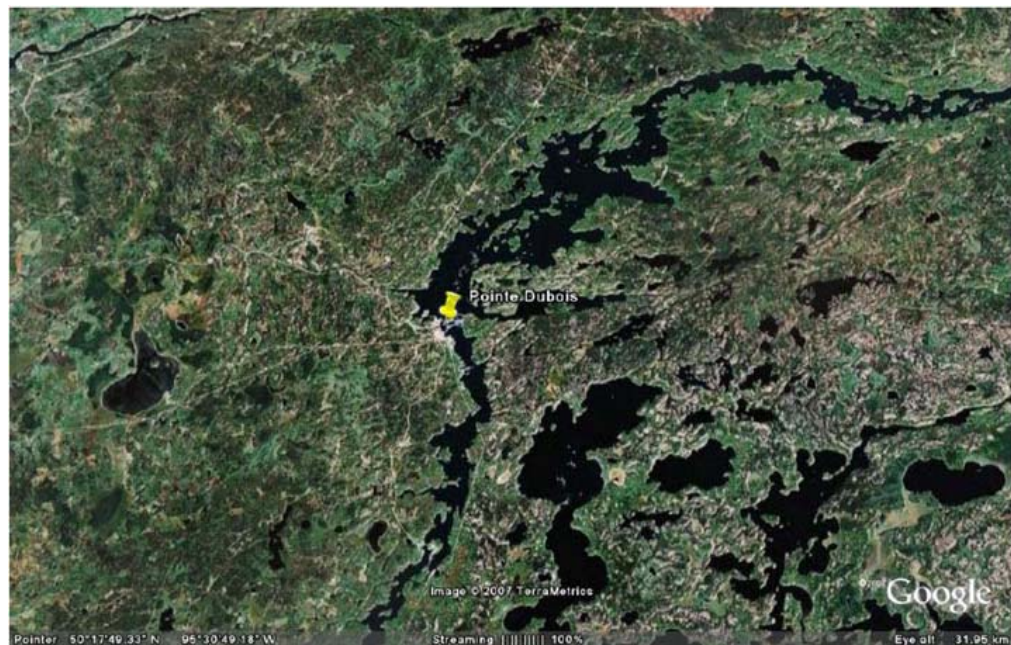
- **What are key facts about CHTTC?**

- Unmanned test facility located at 8-Foot Falls
- Facility operated by University of Manitoba
- Deploys, tests, and retrieves hydrokinetic turbine prototypes
- Collects data remotely via internet
- Hydrokinetic turbines are grid connected
- Commercial and scaled turbines from University researchers will be tested
- CHTTC governed by a Steering Committee from industry, government and academia
- All infrastructure is temporary and will be removed



- **Who are the CHTTC partners?**

- Clean Current
- New Energy
- MAVI
- NRCAN
- OREG
- CEATI
- University of Manitoba
- University of Victoria
- DFO
- Manitoba Hydro



What is a hydrokinetic turbine?

It is like a wind mill operating below the water in rivers and oceans using the flow of water or kinetic energy.

Does it require a dam?

No, as a hydrokinetic turbine requires water flow and not a height difference no dam is required.

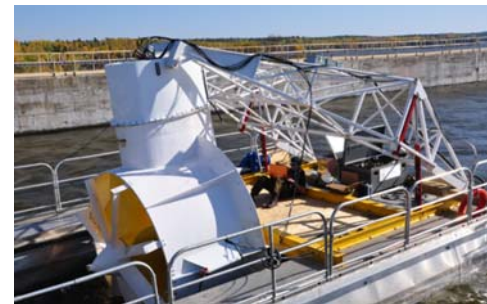
Do hydrokinetic turbines replace hydro dams?

No. Hydro dams produce large amount of renewable electricity for our society; hydrokinetic turbines in rivers produce much smaller amount of power and are intended more for local production, like displacing diesel generators to produce electricity in remote communities (i.e.: large engines)



What can the CHTTC achieve?

Assist remote communities by developing and testing kinetic turbines that are commercially ready to provide renewable energy at a cost that is economic, while providing local employment, and reducing fossil fuel purchases.



Is there a greater good down the road?

Having communities derive a larger portion of their energy needs from renewables will contribute towards addressing critical energy drivers.

Does research fit in provincial park mandates?

Yes, as this has many advantages to all Manitobans



What agencies and permits are required?

Department of Fisheries (DFO)

Ensures fish habitat is preserved

Navigable Waters (Transport Canada)

Ensures boat navigation is maintained

Province Environmental Agency Protection

Ensures adherence to the Provincial Environmental Act

Manitoba Water Resource Branch

Administers the Power act

Manitoba Parks

Issues scientific permits to conduct research in Manitoba Parks

Ensures minimal impact to the park environment and visitors



How long has the University worked on kinetic turbines?

Research in hydrokinetic turbines started in 2003. We performed some of the pioneering research testing and grid connected 3 turbines upstream of the Pointe du Bois Hydro Dam from 2006 to 2011.

Why does the CHTTC not use the previous test site upstream of Pointe du Bois dam?

The site cannot be accessed until 2015 due to the spillway reconstruction

How long will the CHTTC operate?

The CHTTC has funding till March 2016.



What will happen after the tests are completed?

The site will be dismantled and cleaned up to leave no trace of research activities.

How can the community provide input and monitor activities of the CHTTC?

- A formal public consultation begins September 2012.
- A contact person will be available throughout the project to provide information and/or address concerns.
- Up to 3 tours a year will be made available for Park users to see the facility and better understand its activities
- Online measurements will be made available to the community via a website



Is Manitoba Hydro involved in this project?

While this is not a Manitoba Hydro project, they are providing in-kind support of engineering staff, the use of the Pointe du Bois staff House and crane.

What does the CHTTC look like from Slave Falls road?

There is no obvious visible structures from that viewpoint.
Some evergreens may be added to cover any large openings



What does the CHTTC look like from a boat traveling through 8-Foot Falls cut?

A temporary cabin that houses instruments may be seen through the trees. No power lines will be visible as these are under the water.

What does the CHTTC look like from a boat traveling on east side of the island?

A temporary cabin that houses instruments and a dock, a few buoys on the water will be visible. Periodically a research vessel will be in the test area.



What is the CHTTC infrastructure?

- 5 underwater anchors that are cemented in the river bedrock and protrude 15 cm above the bedrock surface
- Nylon cables and chains up to 40 m in length that connect to one or more anchors that lie at the bottom of the river
- A temporary research cabin to house expensive equipment on the island by 8 Foot Falls
- Underwater power cables
- Boats
 - A non-motorized aluminum pontoon boat to hold and deploy turbines
 - A motorized pontoon vessel to deploy turbines
 - A small power boat for safety and to perform fish studies
 - 0 to 3 turbines at any one time located below the water surface



How many people will operate the CHTTC?

- Data is collected remotely so this is an unmanned test site.
- People are only required at the site to
 - Deploy turbine
 - Address technical issues
 - Take samples
 - Remove turbine

How does the research cabin handle waste?

All sewage waste will be incinerated so none will be stored or have to be removed.

Where do researchers sleep and eat?

Pointe du Bois Staff house



- **How does the CHTTC relate to the Canadian Marine Renewable Energy Roadmap?**

- A Canadian turbine test centre for rivers was identified as a requirement by the Marine Renewable Energy Roadmap:

- *Canada by 2030

- 2 GW capacity in marine energy

- 2 billion yearly economic value for Canada

- *Development, installation, operation, retrieval

- *Reduce risks/lifecycle costs

- *Demonstrate reliability

- *Water-to-wire systems

- *Grid-connected arrays

- *Sharing of data, resources and experiences



**CHTTC
Activities**

- **How does the CHTTC minimize impact on public in Park?**
 - Main activities shielded from public view by operating behind an island
 - Most infrastructure is below the water
 - Construction and fabrication activities do not occur on site
 - Will avoid major activities during summer weekends and long weekends



- **Is public consultation legally required?**
 - No, as a Canadian Environment Assessment was not triggered by this project

However, because Park policy is to minimize impact of research activities on Park users, the University of Manitoba wishes to engage in this public consultation and work with Parks and cottage owners to minimize impacts on both the environment and public.



- **What is the benefit of this public consultation?**
 - Obtain and incorporate public feedback into the design and operation of the CHTTC
 - Provide park users a say in the process
 - Report concerns to Manitoba Parks
 - Establish and maintain communication throughout the project
 - Ensure the University operations are documented and transparent to the public



- **What is being measured/tested?**
 - Deployment and retrieval of turbines
 - Power produced to the grid
 - Flow rate, turbulence, vibrations
 - Impact of debris on turbine
 - Fish behavior
 - Environmental impacts on the turbine
 - Environmental impacts on mammals and fish



Will the CHTTC impact navigation on the East side?

- An area 40 m by 20 m on the east side of the island will be marked off by 2 buoys which will indicate to boats to always stay east of the buoys.
- This represent less than 20% blockage on the east side passage.



- **Will there be noise?**
- Underwater turbines can only be heard if their gearbox and generator is above the water.
 - The noise is less than that of a boat and thus will not be heard from the shoreline.
- During deployment and retrieval motor boats will be operating for a short period on the East side of the island



- **What have been the biggest challenges so far?**
 - 1) Using 8-Foot Falls boat launch area during the summer
 - May have possible solution by using Slave Falls dock or secure access to private boat launch area;
 - Adding a new boat launch would promote further development and is not acceptable
 - 2) Making the research building as non-visible as possible from the main shoreline

Adding evergreens will mitigate this



2. Public Consultation Process



UNIVERSITY
OF MANITOBA



UNIVERSITY
OF MANITOBA

Public consultation for CHTTC

When: September 2012

3 Steps


1. Download and read this document from website

<http://home.cc.umanitoba.ca/~bibeauel/index.php?pg=Events>

2. Send email for suggestions & clarifications

Emails will be responded to and sent to the CHTTC Steering Committee

3. Schedule an in person meeting to further discuss your points


Dr. E. Bibeau  UNIVERSITY OF MANITOBA

Current events in renewable energy

CHTTC: Canadian Hydro Kinetic Turbine Testing Centre

A facility located at Pointe du Bois 8-Foot Falls is being developed to test hydrokinetic turbines. As part of the process, public consultation allows park users to provide input into the development of this facility.

The **Public Consultation Process** consists of three sequential steps.

1. Step 1: Download the following file that explains the Canadian Hydro Kinetic Turbine Testing Centre and answer some basic questions that park users may have. Please download and first read this file by clicking the PDF icon. 
2. Step 2: Send an email to obtain more information, get clarification, provide a comment, or recommend a change as to minimize potential impacts on park users. Please [click here](#) to send an email.
3. Step 3: In addition, you can schedule an in person meeting on September 27 to take place at the University of Manitoba. A notice of the time and room location will be emailed to you. To schedule an in person meeting please [click here](#).

- Home
- Courses
- References
- Events
- Download
- Grad Students
- Safety
- Opportunities
- Research
- Contact



Public consultation for CHTTC

Purpose

- Obtain feedback from Park users
- Further minimize impacts on Park users

Why consultation via the internet

- Can reach more people in addition to posters, local newspapers, and Cottage Association.
- Provide details to stakeholders so they may read information at their own convenience.
- More timely response to comments and suggestions.
- More accurate gathering of people's questions and suggestions.



3. Summary of Consultation Process



UNIVERSITY
OF MANITOBA



UNIVERSITY
OF MANITOBA

Public consultation

- This section is on-going.



EXPLORER INNOVATOR ADV
REBEL ADVENTURER TRAILBLAZER
INNOVATOR CHALLENGER REBEL VISIONARY
REBEL PIONEER CREATOR EXPLORER TRAILBLAZER INNOVATOR
ADVENTURER EXPLORER ADVENTURER TRAILBLAZER REBEL PIONEER CREATOR EXPLORER REBEL PIONEER
PIONEER CREATOR EXPLORER DEFENDER TRAILBLAZER REBEL PIONEER EXPLORER ADVENTURER TRAILBLAZER REBEL EXPLORER PIONEER DEFENDER TRAILBLAZER CREATOR

Faculty of Engineering



UNIVERSITY
OF MANITOBA