

Micro-hydro installation natural park – Canada

SUMMARY

Project Description: To reduce CO2 emissions, provide a safer means for lighting the hostel, provide a safer overall environment and offer an educational opportunity and experience for guests.

Project Type: Water & Education in Sustainability

National Association: HI Canada

Project Location: HI Whiskey Jack, Yoho National Park

Estimation of number of reduced tonnes of CO2: The project will save **2.89 tonnes** of CO2 per year, representing a reduction of approximately **15%** per year.

Total Funds Requested: £ 6,026

Total Project Cost: £ 6,550

Annual £ saves and ROI (return of investment): The ROI for this installation reaches beyond conventional financial measures to include safety, education, enhanced guests service and leadership.

Extra Benefits: The micro-hydro will provide an education opportunity for guests and employees to gain a greater understanding of operating with an off-grid power generator through a natural renewable energy source.

Why should this project be funded ahead of others?

At HI-Whiskey Jack, guests are able to not only enjoy a stunningly beautiful setting and challenging hiking trails, they can also experience the unique benefits of indoor plumbing and electrical power both derived from a natural water source – a one hundred foot water fall providing the required pressure for delivering such services.

This hostel, like others in the Canadian Rockies does not generate adequate revenues to recapitalize itself, relying on the much higher capacities and activity levels of our resort and urban properties. Nevertheless, HI-Whiskey Jack provides a mountain hostelling experience like non other, one that is treasured by all who stay there during the three months a year this hostel is open. It is these unique and memorable experiences that linger longest and most profoundly in the minds of those who make the journey. There are the reasons for supporting this project and this hostel.

Given HI-Whiskey Jack's wilderness location in a National Park, this hostel needs this upgrade to truly reflect the values, educational and cultural experiences to its guests – that of respecting, experiencing and gently impacting the environment in which it stands.





DETAILED PROJECT INFORMATION

Purpose / objective:

HI-Yoho National Park is in the heart of the Canadian Rocky Mountains and situated in a remote location about 100 kilometres northwest of Banff. Installing a micro-hydro electrical power generator at this hostel will provide, for the first time electrical power to the hostel and, thereby, accomplish four objectives:

1. To reduce CO2 emissions by reducing propane consumption and replacing
 - Propane fuelled lighting system with an electric LED system and,
 - Propane powered refrigerator
2. Provide a safer means for lighting the hostel (current system requires matches and flammable (and expensive) lantern mantles.
3. Provide a safer overall environment by improved access to communication
4. Offer an educational opportunity and experience for guests.

Background

HI-Yoho National Park, better known as Whiskey Jack Hostel, is miles away from the nearest cell phone or electrical outlet and sits nestled in the bosom of Yoho Valley in British Columbia. With views from its covered veranda of the Yoho Glacier, miles of hiking trails and the gentle roar of a 254 metre waterfall lulling you to sleep, this is THE hostel for those interested in experiencing the Canadian Rockies on unadulterated terms.

The Canadian Pacific Railroad constructed the hostel building in 1922 as one of several in the summer Bungalow Camp for visitors to the Park; the Whiskey Jack Hostel was converted into a hostel in 1969.

In addition to the view of Takakkaw Falls and Yoho Glacier from the hostel's wooden veranda, the hostel offers treated drinking water and hot running water with showers, and flush toilets (water supplied from the glacier itself). Its location provides front door access to the Iceline Trail, "a land of scenic superlatives – soaring, snow-capped peaks, surreal lakes and sparkling glaciers". Some of the best hiking in the Canadian Rockies.

Methodology (How)

HI-Whiskey Jack's water system comes from a Parks Canada pond/weir/penstock system that cascades down the side of the mountain behind the hostel that connects to the hostel building as well as their old washroom facility. This water fall has a drop of nearly 100 vertical feet. As a result, at the hostel, there is a 2" line with 90psi.

This unique set of circumstances would allow us to put a micro-hydro generator in-line, requiring no alterations to any existing systems. The result of the installation would be an electrical power generating system providing 12V power for the hostel.

The installation will include the replacement of the propane fuelled refrigerator with an energy star electricity powered model and allow for the installation of an LED lighting system to replace the existing propane burning lighting system (much safer and simpler for guests).

Furthermore, with the addition of an upgraded inverter, the generator will provide 120V power for the hostel’s communications equipment, allowing the manager to leave the phone active full-time instead of an hour a day. An invaluable safety feature.

And, for the convenience of our guests, we’ll have the ability to add a charge station in the guest kitchen or dorm which will allows guests to recharge their cameras, tablets and laptops.

Monitoring plan

Propane consumption records for all hostels in the mountain parks are kept and internally published, including those for HI-Whiskey Jack. Monitoring will be a simple matter of comparing the annual propane consumption to previous years, including comparisons of consumption per overnight and square foot.

Contribution of this project activity to sustainable development

The micro-hydro installation will provide an educational opportunity for guests and employees to gain a greater understanding of operating with an off-grid power generator through a natural renewable energy source. Posters will give information relative to the system’s installation, the fuel and emissions reductions and the safety features.

Estimation of Emissions Reductions

HI-Whiskey Jack is a seasonal hostel, open for three months during the summer. Hostelling activity uses about 2,200 litres of propane every summer, emitting 4 tonnes of CO₂e. Our estimation is that, with propane only required for cooking, consumption will be reduced by fifteen percent, resulting in an annual CO₂e emission reduction of about 2,887.28 kilograms.

Total (litres)	EF (g CO ₂ e/litre)	tonnes CO ₂ e	kg CO ₂ e	↓ CO ₂ e per year	↓ CO ₂ e per mth (open 3 mths)
2200	1,544	3.3968	3396.8		
↓ by 15%	1870	1,544	2.887	2887.28	509.52
					169.84



Saved Funds and ROI

The evaluation of the return on investment for this installation reaches beyond conventional financial measures to include safety, education, enhanced guests service and leadership.

- Estimated annual savings will be 330 litres of propane or \$200 CDN
- Replacing the propane fuelled lights will eliminate the odour and CO2 emissions inside the hostel that is an unavoidable result of this archaic fuel-burning lighting system
- Improvement to safety from increased availability of communications
- Improvement to safety by removing propane fuelled light and associated fire hazards
- Enhanced guest services
- Marketing appeal of a wilderness hostel environment supported by a micro-hydro generator will increase overnight activity at this hostel
- The example of a functioning micro-hydro project will cast a positive light on future proposals to Parks Canada on similar projects at other hostels.