

2016 COMMUNITY EXCELLENCE AWARDS APPLICATION LEADERSHIP & INNOVATION, Green Initiatives

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Name of Local Government

City of Fort St. John

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The Mayor/Chair is aware that I am submitting this application on behalf of my local government.

Yes

Project/Program Title:

Passive House Project

Project Summary Paragraph

Please provide a summary of your project/program in 150 words or less.

As the Energetic City, Fort St. John recognizes that an excellent source of energy is conservation. As an experiment on what can be accomplished in energy conservation – even in the north - the City embarked on a project to prove that homes here can be built to a high level of energy efficiency.

The Fort St. John Passive House, certified by the US Passive House Institute, serves as an example of the important role that municipalities can play in introducing new ways of building and new technologies that highlight energy conservation.

At the time of completion of the house it was only the third certified single family passive house built in Canada and the northern most passive house in North America.

The house is used as a demonstration project for builders, trades and citizens to learn about energy efficient technologies.

Project Analysis

1. ENVIRONMENTAL STEWARDSHIP

Please describe the mindful and future-focused project(s) and/or program(s) your local government is implementing to protect the environment and create a healthy, livable community.

The Fort St. John Passive House is home to two local caretakers who provide the City with data on energy use and comfort in the house and they provide tours to the public.

The educational project is threefold:

1. Collect data on the energy generated from the solar panels and the energy used by the two people living in the house. Share the data with the community.

The City installed software that monitors the energy produced and the energy used in the house. It is able to track exactly how much energy is consumed from each appliance and electrical outlet per hour.

The data will be compiled, including outdoor temperatures, and shared with the community. We will be able to determine how much energy the house requires on a cloudy day vs a sunny day on our coldest winter days. Indications of heat gained from the sun can be weighed against energy produced by the sun as well.

2. Provide educational tours to builders, students and citizens to teach them about the energy efficient technologies used. The tours provided to the community allow people to see first-hand some of the building methods and technologies that are available. Tours are also provided to dignitaries and guests of the City.

3. Use the project to educate our extended community about what can be accomplished even in northern winters. By applying for awards and working with journalists we have been able to raise the profile of the project across Canada.

2. PROCESS & RESULTS

a. Please provide a brief outline of the steps involved in the program/project and the status of each step.

Over the past 7 years, the City has aimed to become an environmental leader in the Peace River region through the use of pervasive sustainable and environmental best practices. The approach is to prioritize conservation as one of the easiest and best sources of energy.

The Passive House project strategically fits with this “conservation first” approach, as the

Passive House standard is the most stringent energy efficiency standard for buildings in the world.

The simple steps to this project were:

- Council approved the project and budget.
- Council approved use of an existing vacant property.
- Marken Projects provided a design.
- Staff worked as the general contractor and built it.
- Installed caretakers.
- Launch communications. We are currently nearing the end of the active communications plan. Communications of the project will continue for years to come but the active communications plan is nearing completion.

b. Describe the results achieved and provide measurable results where possible.

The most important successes of the project is that the house is a certified passive house, has an Energiguide rating of 91 and is net-zero ready. The communications plan data includes:

- Over 400 people have toured the house
- 5003 people have viewed the tour video
- 756 page views of the Passive House Project page on the website
- 277 page views of the Passive House Construction page on the website

The anecdotal results are the conversations that are beginning in the city. At community events the City operates a trivia wheel with one of the categories being Passive House. More and more people know the answers to the questions every time we play the game.

One local builder has also recently qualified as a certified passive house consultant.

After the Chamber of Commerce member event at the house the members have been inquiring about where products (windows, walls etc) were purchased.

3. CHALLENGES

What challenges did you face in implementing this program/project and how did you overcome them?

The challenges with the construction of the project were in attracting qualified trades and managing the project. No general contractors expressed interest in the project so City staff had to act as the general contractor. With staff turnover this proved challenging to manage. As well, as it is a City project bids for the work came

in higher than they would for private projects. As a result the construction ran over budget.

A further challenge with this project was gaining public approval for the project. Until the project is complete it is difficult to convince the public of its value. The communications upon completion of the project has resulted in very positive public approval of the project and a better understanding of why it is important.

The most important aspect of the project is communications and education. The challenges in this communications plan are as most plans, resources. A staff of two has managed all aspects of communications and tours for the house with no outside resources. This was both a challenge and a benefit. The challenge was in workload but the benefit was in creating two in house experts who could effectively manage the message.

4. LEADERSHIP

How does the project reflect leadership and excellence in the advancement of environmental stewardship?

The City of Fort St. John is the only city in the world to build a passive house as a demonstration project. It is the northern most certified passive house in North America.

As this project is showcased in conferences and articles around the world we hope it is influencing other elected officials to also demonstrate energy conservation in their communities. If more cities provide demonstration projects such as this, the passive house standard can become in high demand by consumers and drive demand. Demand is much more important than regulations in creating change.

5. ECONOMIC IMPACT

a. How was the project a good use of budget and resources?

The project was built with capital funds as an educational opportunity. The City will be sharing the knowledge gained from this project for years to come. When the house is sold the funds will be returned back to the capital budget to be used for future projects.

The costs related to the communication of the project have been travel and staff time. The City has an Energy Literacy line item in the annual Operating Budget to be used to provide education to our citizens and citizens of BC around energy conservation and resource extraction. The funds for communications have come from that line in the operating budget.

Our community understands the cost to a community to create energy. We have Site C dam being built 7km from our downtown and many of our citizens work in oil and gas. To teach our local community and the broader community about conservation will benefit the whole province by needing less energy and contributing less to greenhouse gasses. That is an excellent use of budget and resources.

b. How does the project encourage economic sustainability?(e.g. life cycle analysis, internalizing costs and alternative financing, economic instruments)

A passive house is affordable housing. Because of the extremely low maintenance and energy costs in a passive house it is ideal for people on fixed incomes or first time home buyers. This demonstration could lead builders to the conclusion that homes do not need basement suites to be affordable, they need energy efficiency.

6. ENGAGEMENT

How does the project encourage engagement?(e.g. stakeholder engagement, public participation, equity and diversity, knowledge sharing, capacity building, community identity and marketing)

Throughout the communications on this project we have encouraged engagement by specifically inviting a number of stakeholders to tour the house and having those one on one conversations. We have worked with local builders and trades people, the Chamber of Commerce and the Northern Lights College. We are reaching out this fall to the local school district in an effort to encourage more school aged children to tour the house.

We are working with the Canadian Passive House Institute to host Passive House workshops for local trades this fall.

We have also used Instagram, YouTube, Facebook and Twitter to provide messages on energy conservation and engage in discussions. The discussions are not always as engaging as we hope but we have had some success.

7. INNOVATION

What makes your program/project innovative?

Other cities talk about conservation but we are the only one in the world to demonstrate it with a residential certified passive house. Yes we have solar panels and LED lights and we demonstrate conservation in our city buildings but building a residential house as an educational tool has never been done before. Our

innovation is simply that we did it and we are communicating what we have learned to encourage greener housing demands by consumers.

The City owns a 37-hectare site called Greenridge and has deemed that the future use of the site will be principally residential and feature a sustainable neighbourhood plan. The Passive House project is an extension of that philosophy to begin the educational process that will launch future sustainable neighbourhood plans.

The house itself is innovative in the construction industry. Energy efficient features include; an ultra-insulated building envelope reducing heating and cooling demand by 90%, a heat recovery ventilator with 90% heat recovery efficiency, a 99% reduction in greenhouse gas emissions (GHG's), extreme air tightness, net-zero energy readiness, metal roofing, a solar electric array, high efficiency tilt/turn opening windows, and energy monitoring equipment.

A combination photovoltaic energy (estimated at 3,500 kWh/Area: 19m² per year) and hydro-electric power is used. Air-source heat pumps with backup electric baseboards will emit 0.05 tonnes of GHGs per year — over a 99% reduction in tonnes of GHGs relative to a typical single-family detached dwelling.

8. TRANSFERABILITY

How is this program/project transferable to other local governments?

Every city has the ability to build a passive house as a demonstration project. At the end of the project they can sell the house and recoup their costs. We hope this project will inspire cities who aspire to become leaders in green initiatives to follow our example.

The project proves that passive tech works in the northern Canadian climate and that municipalities can design sustainable communities that are comfortable and affordable.

9. KNOWLEDGE SHARING

What helpful advice would you share with other communities looking to embark on a similar project?

Do not be the general contractor on the project. This will cause delays and cost overruns.

Do:

- Host workshops on the job site throughout construction for local trades.

- Take more photos and video through construction that could be used later for educational workshops.
- Begin building excitement in the community with regular updates through construction so that when the project is complete more people are aware and interested in it.
- Host passive courses to certify more trades professionals.
- Build relationships with local construction associations to work with them to promote the technology and designs of passive houses.

10. TELL US MORE

Please share any other information you think may support your submission.

The project has received several awards and we have pursued media attention for our project. The project has been awarded:

- North Local Government Association Sustainability Award
- Business Examiner's Northern BC Commercial Building 'Green Award'
- Canadian Green Building Council's Canadian Green Building Award – BC regional winner

The project has been featured in several conferences, publications and blogs:

- Article in Treehugger.com
- Presentation at the Passive Low Energy Architecture (PLEA) conference in India in 2015
- Presented at the North American Passive House Conference in Vancouver in 2015
- Featured in Sustainable Architecture Building (SAB) Magazine

The project is part of a much larger community strategy that has included:

- Installing geothermal heat in some public facilities
- Water reclamation on the Pomeroy Sports Centre. Water runoff is used in street sweepers and garden watering.
- Refitting older buildings to be R2000
- Solar net metering on public buildings

- Micro Hydro project that utilizes the energy available in the gravity discharge of the sewer effluent from one of our treatment facilities.
- A toilet rebate program that resulted in 3516 toilets being replaced with low flow toilets
- A toilet recycling program that resulted in 3516 toilets being crushed and used for cement or pottycrete.