Anastasia Statsenko & Patrizio McLelland | DART263

COIN ILLUMINÉ
Illuminated Neighborhood

Comment pourrions-nous utiliser les données pour aborder les pratiques de consommation d'énergie durable à la maison?

Pourrions-nous utiliser des espaces verts accessibles pour récompenser les quartiers qui réduisent la consommation d'énergie à domicile?

DESCRIPTION

If we are to successfully adapt to the environmental, economic and political shifts inevitably advancing with climate change, awareness of critical issues and their solutions must increase.

This project proposes that the City of Montréal's Open Data initiative is used to construct educational data visualizations that urge residents to track their home energy use and to develop more sustainable habits.

It implies the City's collaboration with Hydro-Québec to use existing data and produces new data for the city over time.

The project is a direct call-to-action informed by the 17 Sustainable Development Goals (SDGs) set out by the United Nations.

Journal Metro, 2017

WHY IS THIS NEEDED?

THOUGH WE ARE PRODUCING AND CONSUMING ENERGY MORE EFFICIENTLY, TOTAL ENERGY CONSUMPTION CONTINUES TO RISE DUE TO FACTORS LIKE ECONOMIC AND DEMOGRAPHIC GROWTH[8]

- Montreal has Canada's cheapest rates of residential electricity[4]
- Quebec's per capita total energy consumption is ranked at 21st in the world[1], surprising for a region with only 8.4 million inhabitants[3]
- Quebecers are also the world's 2nd greatest per capita electricity consumers, behind only Icelanders[1]
- In Quebec, hydroelectricity provided by Hydro-Québec accounts for 97% of total energy consumed[1]

While hydroelectricity is a renewable energy source with little carbon footprint, the expansion of hydro-electric infrastructure to keep up with growing consumption demands comes with costs[2]:

ENVIRONMENTAL DEGRADATION:
- damaged wildlife habitat
- loss of landmass
- harmed water quality
- obstructed fish migration
- release of GHG

SOCIAL IMPACTS:
- affects land use, homes and archaeological sites
- prompt forced migration
- diminishes the recreational benefits of rivers

ONCE INSTALLED, THE ECO-DIDACTIC SCULPTURES CAN BE DEVELOPED INTO TWO-WAY COMMUNICATION DEVICES TO BE USED IN ADDITIONAL WAYS TO VISUALIZE OTHER DATA SETS, PROVIDE INFORMATION AND RECEIVE FEEDBACK FROM THE PEOPLE, PROVING USEFUL FOR RESIDENTS, THE CITY OF MONTREAL'S OPEN DATA PROJECT AND FOR HYDRO-QUEBEC.

The goals of this project are in line with the 17 International Sustainable Development Goals (SDGs). It integrates local actors (city officials, industry representatives, artists and citizens) and emphasizes open data, collaboration, and ownership over shared goals. Specifically, the shared goals are reducing energy consumption.

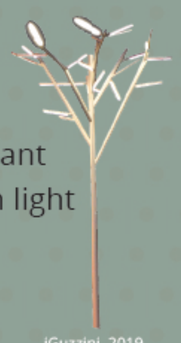
More generally, the project challenges participants to become aware of their needs, re-evaluate their choices and change consumption patterns to more sustainable ones.
Through a reward system and active resident engagement, this project promotes both awareness of unsustainable practice, and encourages behavioral change using clear messaging and both visual and textual calls to action.

Please see the pamphlet for more information.

Coin Illuminé consists of three complementary parts:

1. eco-didactic data visualization sculptures

Existing data will be used to create a real-time visualization in the form of unique eco-didactic sculptural installations placed in each of Montreal's boroughs.


iGuzzini, 2019

Placed in a central area within each borough, each installation will be fed with a constant stream of real-time energy usage per borough from Hydro Quebec, and will change in light intensity and colour depending on how much energy each borough consumes.

If use is down, the sculpture will be more vibrant, if the usage is high or rising, the sculpture will dim or be completely dark. These visual cues create a positive reward system for boroughs lowering their energy use. The necessary data is already collected by Hydro Quebec, searchable by postal code and thus anonymized[7].

Each sculpture will act as an enticing photo opportunity that promotes awareness of sustainability and encourages discussion through the sharing of photographs on social media

Designs for each installation will be sourced from an open-call for proposals issued by the city to support local artists. Each installation will be solar powered and made of sustainable or repurposed materials

Each sculpture will display data for the borough in which it is located, however, passers-by may enter their different postal code into the screen on any installation and it will activate to reflect that postal code's usage for a limited time.

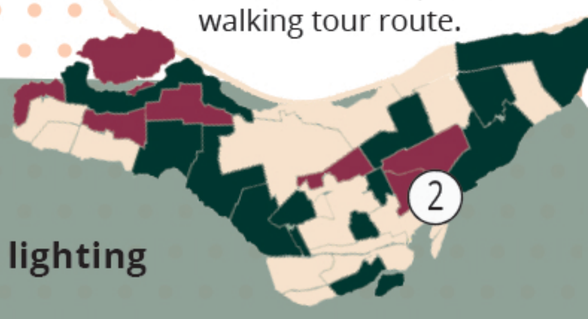
The screen will display: a project description, relevant facts, encouraging statistics, energy-saving tips, and a link to the City of Montreal's Open Data Portal.

BENEFITS AND OUTCOMES

- New data collection will show which neighbourhoods would benefit from smart street lighting, microgrid technology or other smart energy strategies that reduce energy consumption
- New data collection will show which neighbourhoods are in need of additional targeted sustainability education campaigns
- Cost-saving and sustainable habit forming for residents
- Increased public awareness of the SDGs and the Open Data Portal
- The support of local artists through the commission of their work to construct the installations.
- A concrete example of the City of Montreal addressing the 4th, 7th, 11th, 12th, 13th, 15th and 17th SDGs

2. interactive map

An interactive map will be available online and provide locations and statistics for each installation, with a walking tour route.



3. solar powered smart lighting

A series of small-scale community-led projects will bring together city officials, Hydro Quebec, local artists, residents and families in the installation of smart solar-powered lights in their ruelle verte.

Like the main installations, these lights will activate during lowered energy consumption, and remain off when consumption is high. However, they will be localized to reflect only the consumption for the homes in the particular ruelle they are installed in.


Navage Patch, 2019

Souces: 1. https://www.iedm.org/45542-energy-questions/ 2. https://www.manufacturing.net/chemical-processing/article/13245967/examining-the-pros-and-cons-of-hydropower 3. https://www.stat.gouv.qc.ca/statistiques/population-demographie/structure/qc_1971-20xx.htm 4. https://www.fraserinstitute.org/sites/default/files/energy-costs-and-canadian-households.pdf 5. http://www.hydroquebec.com/data/documents-donnees/pdf/sustainability-report.pdf 6. https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202019%20refinement_Eng.pdf 7. http://www.hydroquebec.com/residential/customer-space/moving/estimate-electricity-costs.html 8. https://www.eia.gov/todayinenergy/detail.php?id=12251