**Bangor Hydro Kiosk**

**Presented to**

**Bangor Hydro Electric Company**

Proposed by

**ASAP Media Services**

University of Maine

May 29th, 2012

**Introduction**

The Bangor Hydro Electric Company is an electricity transmission and delivery company serving 100,000 customers in central and eastern Maine.  As new energy technologies are developed, Bangor Hydro has done its part to educate customers and bring these services to Maine.  Recently, Bangor Hydro has shown interest in furthering the expansion of heat pump systems in its customer base. By taking advantage of the naturally consistent temperature found in the layers below the earth's surface, heat pumps have an almost endless warming and cooling capacity.  Along with this, by operating with such efficiency, they are far more beneficial to the environment when compared to oil and gas alternatives.  Bangor Hydro is working to bring this advantageous technology to the area by educating the general public.

ASAP Media Services was approached by Bangor Hydro to design and fabricate a portable kiosk system that can be used as a heat pump education tool for the area.  Because heat pump systems are fairly uncommon in Maine, the kiosk will have informative sections that allow users to explore the history, science, and environmental impact of heat pump technology. The system will be interactive and encourage viewers to further investigate heat pump technology for their personal situation.  A web version of the kiosk will also be developed to give Bangor Hydro customers access to this interactive information from any computer. This proposal outlines the remainder of ASAP Media Services’ solution to this request.

**Audience**

There are three major audiences would be interested in a kiosk and web application focused on heat pump technology. Each of them has specific needs and expectations that this educational kiosk must anticipate in order to be successful. These needs are introduced and explained below.

Homeowners

Homeowners are always on the look out for choices they can make that will improve their quality of life. Many times, these decisions are financially driven and revolve around saving money both in the long and short terms. With the help of the proposed kiosk and website application, these homeowners would be able to determine the approximate costs associated with installing a heat pump in their home. They could then compare these short and long-term costs with their current method of heating to determine the best course of action.

High School Students

Students with access to the proposed kiosk will be exposed to heat pump information in such a way that they can understand and appreciate the results of implementing various energy solutions. Once students have been exposed to the kiosk, they would have an opportunity to do further research from home with a web-based application like the one proposed by Bangor Hydro. With this high level of understanding, students would be encouraged to spread their knowledge to their friends and relatives. Affording these students this sort of information allows for them to continue on into the work force or higher education with invaluable information and knowledge that may serve as a foundation in the pursuit of progression and innovation. It is important that BHE leads by example in these respects as they work in designing the proposed kiosk and web application. By providing a dynamic, engaging and kiosk, students will be presented with critical information through an effective medium that promises to seize attention and embrace a fun, educational experience.

Trade Show Attendees

Bangor Hydro has also expressed their desire to put this kiosk application on display at various trade shows they attend. Many people who attend these trade shows are closely connected to the alternative energy and heating markets. Among these are contractors and installers that provide heat pump services who may be unsure of the success of a business venture in Maine. Seeing the strong initiative of Bangor Hydro to promote heat pump technology would encourage more of these businesses to open up branches in Maine and create new partnerships as well as showcase Bangor Hydro’s competitive commitment to innovation and sustainable thinking.

**Possible Modules**

This kiosk will showcase the history, science, installation, economics, and environmental impact of heat pumps. These are important aspects of heat pump technology that should be included in order for the application to accurately inform and mediate consumer decisions. Each of these sections (described in more detail below) will be presented individually on the kiosk startup screen, allowing users to explore sections most relevant or interesting to them.

History

The recent explosion of public interest in green technologies brought heat pumps into the limelight as a “new” form of alternative heating. What many people do not realize is that heat pumps have been in existence for close to two hundred years (the first one being developed and built in 1855). The theories behind heat pumps stretch even farther back to the mid 1700’s when the idea of refrigeration was introduced and demonstrated. A History section would not only be an interesting read for many users, it would also reveal possible reasons why other methods of heating are more popular (for example, the appeal in the past of cheap oil), why it is becoming more popular today, and provide a framework for where the industry is headed.

Science

The science involved in heat pump technology is difficult to conceptualize for many people. Indeed, this confusing idea that pulling heat out of the ground can modify a building’s temperature may be one reason why heats pumps are not more widely accepted. Interestingly enough, heat pump technology is based on relatively simple physics, which can be broken up and presented individually to aid in heat pump education. The Science section of the kiosk will present these parts in various, interactive activities, providing all audiences with a better understanding of heat pump technology.

Installation

Installation of a heat pump system is almost as foreign to consumers as the physics that make them work. Specific installation processes, such as a geothermal, are also incredibly daunting and are a major factor when a homeowner considers what type of heating system to implement. The Installation section of the kiosk will provide an overview of the process by which a heat pump is integrated into a building, presenting the major steps in simple terms with the aid of graphics. This section will be of most help to homeowners who will walk away with a better understanding and be able to see more clearly how the installation of a heat pump will affect their property.

Economics

Of course, the most influential factor of any major purchase is the cost. This is especially true for heat pumps which, when compared to other methods of heating, have a high initial cost. Unfortunately for heat pumps, seeing such a high price tag instantly intimidates many consumers and the idea of installing one is rejected before all of the facts are collected. Thus, the goal of the Economics section is to provide users with both short **and** long term heating system cost comparisons, including maintenance and return on investment figures including notable government rebates. Again, this section will be most beneficial to homeowners as they will be able to compare the cost installing a heat pump to their current method of heating.

Environmental Impact

When compared to other methods of heating and cooling, such as gas and oil, it is clear that heat pump technology is a step above the competitors when it comes to green efficiency. “Going green”, as previously mentioned, has been a primary concern of homeowners’ nation-wide and has been defined as a matter of “national security” in some circles. The combination of these two facts illustrates the benefits of making environmental aspects of heat pumps accessible for consumers. Thus, the Environmental Impact section of the kiosk will provide this information, as well as information pertaining to “green” government initiatives including but not limited to rebates.

**Proposed Solutions**

Kiosk

open-source programming environments, primarily totouchA kiosk is a platform that allows for interactivity and it is important that this project takes advantage of that. Developing touch activities relevant to the information presented in each module adds a plethora of interactivity to the kiosk that a simple presentation does not accommodate, and as such will provide users with an even better understanding of the heat pumps. open-source programming environments, as well as sets the stage for the web-based application described below.

Web Application

A web-based application will allow Bangor Hydro customers to experience the kiosk from their home computer. Because the kiosk will be brought from venue-to-venue by Bangor Hydro and/or kept in a fixed position in their lobby, there is a strong chance that many consumers will never get to experience it. Through a web application, any Bangor Hydro customer will have access to the kiosk modules. In addition, users who have already experienced the kiosk will be able to revisit the information online at their own convenience.

Possible Tools and Presentations

Each module will consist of both textual information and interactive media, ensuring that users can explore content instead of just reading through it. This media will take a variety of forms and require the development of a variety of tools. Possible tools and presentations include:

* **Real World Connections ­–** Current heat pump owners would be interviewed to determine what factors motivated them to install a heat pump. These interviews could be presented on the kiosk for interested customers to see.
* **Real Time Comparisons to Other Energy Sources** – This would be a tool where homeowners could get an approximate cost of how much money installing a heat pump would save them each year.
* **Animations** – Animations would present users with visuals that would enhance their understanding of heat pump technology.
* **Simulations** – Users would modify a constructed heat pump simulation to determine how changes in weather and climate may affect it.
* **Interactive Models** – All models presented in the kiosk would be interactive, giving a user the opportunity to explore an aspect of heat pumps in more detail.

The proposed sections of this project (along with individual production times) are listed below:

**Research**

* ASAP will need to research heat pump technology independently as well as with help from Bangor Hydro to ensure the accuracy of information presented on the kiosk/web (approx. 100 hours)

**Conceptualization**

* This includes designing a layout for the kiosk, determining what and how information should be provided within each module, and designing touch activities specific to each module (approx. 175 hours)

**Development**

* Creating the content and interfaces that will be presented in each module and developing the interactive, touch activities associated with the kiosk. Once those activities are prototyped and approved, single-touch versions will be developed to accommodate the web application (approx. 400 hours)

**Testing**

Each module will be user tested after completion to ensure ease of use and success at conveying information (approx. 35 hours)

**Timeline and Cost Analysis**

The proposed project, if all previously mentioned features are designed and implemented with visual styling, will take approximately 710 hours to complete. ASAP Media Services' hourly rate is $35. A breakdown reflecting the above estimate is as follows:

**Cost Analysis**

|  |  |  |
| --- | --- | --- |
| **Section** | **Hours x Rate** | **Total** |
| Research | 100 hours x $35/hour | $3,500.00 |
| Conceptualization | 175 hours x $35/hour | $6,125 |
| Development | 400 hours x $35/hour | $14,000.00 |
| Testing | 35 hours x $35/hour | $1,225.00 |
| **Total Cost** | **710 hours x $35/hour** | **$24,850.00** |

In the proposed strategy, Bangor Hydro will work with ASAP to establish a firm understanding of heat pump technology and the effects that attributes of buildings have on heating and cooling potency. ASAP will design layouts and interfaces for each module and the kiosk as a whole, as well as determine what and how information should be presented for each module. Content and interfaces will then be developed based on the designs, and specific interactive activities for each module will be created and prototyped. At the completion of each stage of prototyping a section, its status will be sent to Bangor Hydro for review and alteration. Additionally, ASAP and Bangor Hydro will meet bi-weekly for status updates to discuss progress.

**Conclusion**

ASAP Media Services will assist Bangor Hydro in effectively disseminating heat pump information to Bangor Hydro’s costumers through the development of a kiosk and web application. Users will be able to easily access and interact with modules to explore facets of heat pump technology such as history, physics, installation, economics, and environmental impact. This capacity will increase costumer energy awareness and improve customer-relations as well as promote a solid understanding of the information at hand to future customers. It will also encourage the use and promotion of the heat pump to those already working and established within the industry.

By working to empower consumers with the necessary tools to understand and explore energy information, Bangor Hydro has demonstrated its commitment to its costumer base in numerous ways including, but not limited to, anticipating the future of energy consumption. ASAP Media Services shares Bangor Hydro’s forward-looking perspective regarding technology and is excited to partner with Bangor Hydro to assist with its goal of exploring and building the future of technology to both design and realize the world of tomorrow.

Sincerely,

ASAP Media Services

**Agreement**

Original graphical elements created by ASAP specifically for the application becomes property of Bangor Hydro once payment has been delivered. ASAP shall retain ownership rights of interactivity designs and reserves the right to reference and reuse source components (void of Bangor Hydro’s styling, data, or information otherwise) in future projects.

We hereby agree to these terms, conditions and scope of work between ASAP and Bangor Hydro concerning research and development of the kiosk and web application.

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Date Mike Scott Date

Bangor Hydro ASAP Media Services