

Name: _____ Class: _____

Project Recharge Home Energy Proposal Note Guide

Unit 5, Lesson 1

Use the Project recharge home Energy Proposal information sheet, Outline and rubric to complete the sections on this note Guide

Section 1 Mission Statement: (explains what you are trying to accomplish, 3-5 sentences)

My idea is to add closed cell spray foam insulation in the attic to reduce infiltration. In an effort to be more sustainable, my family will install the closed cell spray foam insulation in our home. This will reduce our energy and gas bill. By installing closed cell spray foam insulation in our attic, we will strengthen our house envelope by decreasing the amount of infiltration in our home.

Section 2 Statement Needs and Goals/Objective (introduction to your proposal)

Statement of Need

Claim: Statement of need is an overview of the estimated current sustainability efficiency situation at your home.

At my house we could use improvements, such as adding more insulation into the attic, to increase sustainability.

Evidence: Data to support what your proposal would gain in sustainability/energy efficiency situations at your home.

Our gas bill average per month is \$70, the average gas bill according to "Rocket HQ" is \$55. Our electric bill average per month is \$120 a month, the average bill according to "RentLingo" is \$115. We have reduced our electric bill to \$120 by replacing more than half of our lights to LED lightbulbs. Our old electric bill was \$130. Our house was built in 2005 between then and now there has been a difference in insulation technologies. In the winter there is heat loss and in the summer there is heat gain because of the lack to prevent infiltration. In the summer my house gets very hot because of the heat gain. While, in the winter my house gets cold because of heat loss.

Reasoning: Rational, how does your evidence support your claim and expected outcome

My heater runs all day in the winter and my A/C runs all day in the winter because of the lack to prevent infiltration. This can be solved by using closed cell spray foam insulation, it will prevent infiltration and can expand to 10 times its size. It also doesn't allow mold to grow within it because of its ability to keep the moisture in the air low. This could save us hundreds of dollars in months and even more in the long term. This will also prevent heat loss in the winter. In the summer the insulation prevents infiltration resulting in no heat gain. It also reduces how much we use the A/C and the heater to keep the house a comfortable temperature. This will reduce our energy bill and gas bill.

Goal and Objective

- 1) **Goal:** Specific goals for the project based on the need(s) that you are addressing in your home. Goal should be behavioral or structural. What is the desired outcome?

The goal for the project is structural. The existing insulation will be replaced with closed cell spray foam insulation. The desired outcome of the project is to replace old insulation with upgraded insulation to make a more comfortable house year round, while saving money and

energy. The R-value of closed cell spray foam insulation is 7 per inch. R-value is the capacity of an insulating material to resist heat flow or in other words it's how good a material can prevent heat flow. The higher the R-value the less heat flow. This is more than twice the amount of the R-value of other insulation including fiber glass, cellulose, and cotton. Closed cell spray foam insulation has one of the highest R-Value than any other insulation available.

- 2) **Objective:** Provide a clear rationale/objective for addressing this need(s). Discuss why it/they is/are important to fix, specifically how it impacts the three spheres of **sustainability: economic, environmental, and societal**. How would your goal improve efficiency or save money. Attach an extra sheet for this section if needed.

➤ 3 spheres

- Economic: By replacing an older insulation with upgraded insulation it will save the consumer money on both their energy and gas bill. The newer insulation will be more effective and efficient. The initial cost is more expensive but over time the savings will benefit the consumer.
- Environment: By replacing older insulation with upgraded insulation, less energy will be used to keep the house comfortable temperature. The less demand for energy will lead to a decrease in fossil fuel consumption. With less fossil fuels being consumed, the family's environmental impact minimizes. This minimized demand for energy will reduce carbon emissions. The insulation will keep the house a comfortable temperature without using energy. This will be a more environmentally friendly way to keep the house a comfortable temperature.
- Societal: By replacing older insulation with upgraded insulation will affect the families house envelope in a more positive way. The newer insulation will prevent infiltration from the attic. This will keep the climate of their homes more stable, and will save the family money on both their energy and gas bill.

Section 3: Data, Project Activities, and Cost

- 1) Discuss how much your change will cost and why it is worth the investment.

The cost to install closed cell spray foam insulation in your home's attic it's about 628. The cost per board foot is between from \$1.25 to \$1.50. The cost to install closed cell spray foam insulation can be cheaper compared to other types of insulation, which are less effective. For example, the cost per board foot with fiberglass is between \$1.64 and \$2.19. Also, fiberglass can cause respiratory problems when inhaled. Closed cell spray foam insulation is worth the investment because it's the best insulation for preventing infiltration, heat gain, and heat loss.

- 2) Data to support your statement of need (claim). You can use data from research and collected from activities and labs already conducted. This can also be presented in table format. Attach additional tables if needed

The average energy bill is \$115 and my energy bill is \$120. By adding closed cell foam spray my energy bill can go down to \$100. This means I would be saving \$240 per year and in ten years I will be saving \$2400. This will not just save money in our energy bill we will be saving about \$180 on our gas bill. This means in just one year we will be saving \$420.

Data Collection Part II

Month	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
My Energy Use	124	123	121	120	120	122	123	120	119	117	116	115
Energy Use With Insulation	104	103	101	100	100	102	123	100	99	97	96	95
My Gas Use	87	84	78	75	72	70	67	70	73	76	78	83
Gas Use With Insulation	72	69	63	60	57	55	52	55	58	61	63	68

Data Collection

Months	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Average Energy Use	112	113	114	113	112	113	115	117	118	120	117	116
My Energy Use	124	123	121	120	120	122	123	120	119	117	116	115
Average Gas Use	60	59	57	56	53	54	55	55	53	52	55	52
My Gas Use	87	84	78	75	72	70	67	70	73	76	78	83

- 3) For structural changes where might you buy these upgraded appliances or materials and what is the cost? For structural changes I would install the closed cell spray foam insulation in the attic. The cost to install the insulation in the attic is about \$628. What are the steps that must occur and timeline for the completion of this proposal? The steps that must occur are remove any old insulation in the attic, then clean the place where it will be applied, ensure the area is dry, spray insulation, and wait till it fully expands. This will take between 2 to 5 hours, depending how efficient you are. It will take less if a professional does it for you. If you are to do it yourself make sure you are wearing the right PPA and read the safety requirements.
- 4) Cost Share: Are there any rebate or cost cutting programs that would help reduce costs for energy upgrades? If programs are available what is the cost savings? You can cut cost by installing the insulation by yourself. This will significantly cut costs because installation by a professional costs more.
- 5) For behavior goals, how might you teach different **behaviors** to your family? How are you going to change? I'm going to teach my family about changing our behaviors during dinner when we are all at the dinner table. I'll tell them that by just changing our behaviors we can save money. For example, we can save money by just turning off the lights when we leave a room and open the windows to cool down the house. This will reduce our energy bill.
- Section 4: Impact Analysis (conclusion)**
- 1) What are the “**pros**” of the proposal? What impact could it have on the environment, your community, your home. Include data to support your proposal. What makes success likely/possible?

One pro of this proposal is that insulation reduces the energy needed to keep the climate a sustainable climate. Another pro is that not like open cell spray foam insulation closed cell spray foam insulation only produces 1 GWP. GWP is the global warming potential of a gas, 1 GWP is the equivalent to carbon dioxide. Open cell spray foam insulation produces 1030 GWP, this means that it's 1030 times worse than carbon dioxide. This can cause negative impacts to the world. One result of GWP is speeding up the process of global warming. Also, closed cell spray foam prevents infiltration, heat gain, and heat loss. All which are aspects to preventing the house a sustainable temperature. The thing that makes success possible is that it reduces the energy needed to keep the climate a sustainable climate in my home. This will also reduce our house's environmental footprint.

- 2) What are potential “**cons**” that could limit or stop the project? How will you overcome these potential hurdles?

One potential con of this project is that if not installed correctly the closed cell spray foam insulation will not work effectively. This will allow infiltration through the attic and ultimately a waste of time and money. Another con is that it's expensive to get a professional to install the insulation. Although, it may be expensive for a professional to do it but it will be installed properly.

References: Give the Name of the web site and the URL of the web sites you used for your information.

You need a minimum of 3 references or contacts

Name: Benefits of Closed-Cell Spray Polyurethane Foam

URL: <https://www.houleinsulation.com/benefits-closed-cell-spray-polyurethane-foam-spf.html>

Name: The Difference Between Open-Cell and Closed-Cell Spray Foam

URL: <https://www.familyhandyman.com/walls/the-difference-between-open-cell-and-closed-cell-spray-foam/>

Name: Environmental impacts of Spray Foam insulation

URL: <https://www.ecotelligenthomes.com/environmental-impacts-of-spray-foam-insulation/>

Name: All You Need to Know About Insulation’s R-Value

URL: <https://todayshomeowner.com/insulation-r-value/>

Name: Closed Cell Foam Insulation :: Risinger Goes Rouge

URL: <https://www.youtube.com/watch?v=wS8aDbhf6Zw>

Name: Are You Average? Here's what the typical U.S. household spends on utility bills each year

URL: <https://www.rockethq.com/learn/personal-finances/average-cost-of-utilities>

Name: What is your average energy bill.

URL: <https://www.rentlingo.com/average-electric-bill-by-state>

Professional Contacts: Companies, Contractors or Professionals:

Name of Contacts Employer: _____ phone number: _____

Name of contact and email address: _____ Email: _____

Information

Provided: _____

Name of Contacts Employer: _____ phone number: _____

Name of contact and email address: _____ Email: _____

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