

**ENST 411: Lewisburg Borough Municipal Utility Bill Audit  
Final Report**

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Environmental Community Project  
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## **I. Acknowledgements**

We would like to extend a massive thank you to Sandy Fields, Sam Pearson, Kim Wheeler, Stacy Richards, and many other members of the Buffalo Valley Climate Coalition (BVCC) for their continued support and guidance throughout this project. These incredible women have not only taken the time to assist us with this project, but also shown incredible dedication and commitment to the Lewisburg community. We would like to thank Bill Lowther, the Lewisburg Borough Manager, and other members of the Lewisburg Borough who have supported our work and entrusted us with the Lewisburg Borough municipality bills. We would also like to thank Brandi Robinson, Peter Buck, and Pam Adams from Ferguson Township who have gone out of their way and serve as mentors during data collection and analysis. Additionally we would like to extend a thank you to Professor Amanda Wooden and the students of Bucknell University course ENST 411: Environmental Community Projects for their continued support and advice during the whole process. This project has challenged the three of us in many ways we did not anticipate. From learning to collaborate and ask for help, to learning a new skill set with Excel, we are thankful this project has challenged us to critically evaluate our work. We would like to acknowledge the work done by the Lewisburg Green New Deal, a hub of the Sunrise movement, and various other individuals who have paved the way towards climate action. Without your advocacy work, our project would not have been possible.

## **II. Background and Goals of BVCC**

The BVCC in Lewisburg, PA is composed of residents of Union County concerned with the climate crisis. On September 20, 2019 a Green New Deal Lewisburg, BVCC, and community supporters for climate action marched through Bucknell University to Hufnagle Park to ask the Lewisburg Borough Council and Mayor to make progress towards energy reduction. During the September 20th 2019 Climate Strike, Mayor Judy Wagner made a Proclamation recognising climate change and proclaimed that the Borough of Lewisburg must work toward climate action resolution.<sup>1</sup> BVCC and community partners aim to help the Borough reduce energy consumption, save money, and cut down greenhouse gas emissions.

BVCC and community partners are working on a strategy to move the borough in this direction by studying the baseline of current emissions and researching examples of other towns that have made carbon neutrality commitments and how they have “descended” their energy emissions. Bucknell students in ENST 411 partnered with the BVCC to complete a Utility Bill Audit (UBA) of local municipal properties and fleet vehicles used and maintained by Lewisburg Borough. The goal of the audit is to work with the Lewisburg community to discover how much energy the borough government is using and convert that into greenhouse gas emissions (GHG). The UBA includes the Lewisburg Borough’s municipal buildings’ electricity use, energy used for heating and cooling, appliances, lighting and fleet vehicle fuels.

Our findings--in this final report and in a presentation--will be sent to the BVCC and through the BVCC to the Borough Council. The draft resolution included in this document could be used by the BVCC and community members to lobby targeted and specific goals for the Lewisburg Borough. With

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<sup>1</sup> Wagner, Judy. “Proclamation Regarding Climate Change Initiatives in the Borough of Lewisburg.” Mayor Judy Wagner Wrote Proclamation in Response to Green New Deal Lewisburg Climate Strike. Lewisburg Borough. Lewisburg PA. March 20, 2019. Document received via email from Mayor Wagner.

the UBA completed and an energy descent strategy in the works, BVCC and their community partners are hoping that Lewisburg will follow through with its climate action resolution proclamation. Reducing municipal greenhouse gas emissions is crucial to combating climate change and is symbolic to community members that have expressed massive concern for the climate crisis, as demonstrated at the Climate Strike in September 2019.

### **III. Introduction**

This document aims to synthesize and catalog the work we have done over the past semester. The subsequent sections discuss the various stages our group has undergone to achieve our three main goals.

The three main goals of this project are as follows:

- 1.) Draft a short document to help sell the process of data collection to Lewisburg to demystify and clarify what this process is, what data are needed, and why it is important
- 2.) Conduct a GHG emissions analysis for Lewisburg borough
- 3.) Present findings to Lewisburg Borough government officials to lobby the borough to create an energy descent strategy

Through the various phases in our project we will highlight what work we have done to achieve these three goals. This final report will touch upon our Research Design, Data Collection, Field Report, Ferguson Township case study, and future work. Additional information on the topics mentioned above can be found in our official Research Design and Field Reports.

### **IV. Methods**

#### **A. Phase 1: Research Design**

Our Research Design document contains ten sections focused on laying out the groundwork for completing our three main goals. The first section focused on defining a municipal energy descent program and our approach to creating one for Lewisburg. We discussed specifically how a UBA will fit within our municipal energy descent strategy framework. Questions of approach and method were discussed and informed by the literature review. The literature review discussed various scholarly works that focus on the perception of climate change, social and political makeup of a community, case studies, and federal government documents related to energy descent strategies. The second part of the document focused on data collection and analysis of current municipality energy usage within Lewisburg for the past two years. This included a discussion of which software program will be employed, how the research group will conduct its energy usage analysis, and what types of data are needed. The final part of the report discussed an intention to analyze the data collected and present options to the BVCC, feasibility of our design, and ethical considerations. By the end of the research project the BVCC would be able to take the data collected and analyzed and present the findings to the Borough Council. The findings would supplement a request by the BVCC for the Borough to support an official municipality energy audit.

#### **Defining a Municipal Energy Descent Strategy**

Municipal energy descent programs are energy evaluating programs conducted by the local governments. These strategies are aimed at reducing carbon emissions by establishing energy consumption baselines and figuring out financially feasible alternatives from the available data reports. Such solutions could include voluntarily or involuntarily replacement of

fossil fuels with renewable or cleaner energy sources to fight against the climate crisis or switching all municipality building lights to certified energy efficient light bulbs. A municipality must calculate the costs and benefits of the major proposed energy reduction strategy in relation to the region and primary energy sources available in the area due to the social, economical, and environmental factors. While municipal energy descent programs are not necessarily widely adopted by every township or city, ensuring the safety and prosperity of a government's citizens is a core role of government. We believe such commitments ingrained within a government will aid us in lobbying for a municipal energy descent strategy. Recently, due to the local culture of the Lewisburg Borough and the influences brought by the climate strikes, it has become apparent that community members want Lewisburg Borough to engage in a municipal energy descent strategy. If carefully addressed, a municipal energy descent program can provide very positive feedback to both the communal and political benefits of the borough, as well as the environmental and economic benefits that are directly profits from the achievements of the plans.

### **Feasibility**

With the awareness of the importance of the municipal energy descent programs, and the time limitation set by Bucknell University's 2020 spring semester schedule we decided to focus on the UBA analysis as the main project priority. A UBA is an analysis of current energy usages in a given municipality. It is a necessary starting block for a municipal energy descent program, as it creates a baseline understanding of current energy usage. We looked at the electricity, heating oil, natural gas, and water/sewage usage in the Lewisburg Borough for the past two years to calculate current energy usage. We remained cognisant of human error possibilities while using the raw data, seeking to ensure the data we produced was accurate and consistent. Our third goal was to focus on using the data to inform next steps in the municipal energy descent program. We hoped to utilize the data collected in UBA to draft a Lewisburg resolution focused on committing to energy reduction. We believed that our goals were realistic given the short time frame of four months.

### **B. Phase 2: Data Collection**

We contacted Bill Lowthert, the Lewisburg Borough Manager and the Borough Staff to request for the energy usage bills. We specifically asked for all months from 2018 and 2019. A time frame of 24 consecutive months was chosen because this time frame gives us two complete season cycles that take into account peak energy demands for heating and cooling during the winter and summer months. The Borough prepared the utility bills by photocopying the bills and organizing them by energy consumers i.e. buildings, lighting, fields and parks, and fleet vehicle usage of petrol and diesel. From the utility bills it was determined that the Borough electricity, natural gas, fleet vehicle gas and diesel and water and sewage would be audited.

Data was lifted from the physical Borough bills and entered into an Excel custom spreadsheet, called Energy Tracker. Energy Tracker is a custom Excel spreadsheet template created by community partner Stacy Richards, Union County Commissioner. Excel spreadsheets were created for each category of use to itemize the types of energy consumers. The Lewisburg Borough buildings consist of one main office building and three garages. In the lighting category the lights were broken down into Tri-Globe lights, overhead street lights, and traffic lights. In the fields and parks category, individual spreadsheets were created for separate fields and parks. Each individual energy consumer was broken down into types of energy used: electricity, natural gas, water/sewer, and fleet vehicle fuels; petro and diesel.

**Itemized List:**

- 1.) Buildings
  - a.) 55 South 5th Street
  - b.) 101 North 5th Street
  - c.) 105 North 5th Street
  - d.) 115 North 5th Street
- 2.) Garage
  - a.) 205 North 5th Street
- 3.) Fields and Parks
  - a.) Green Memorial Park
  - b.) Hufnagle Park Center
  - c.) South 6th Street Park
  - d.) Saint Anthony Street Wolfe Field Park
  - e.) Saint Mary Street Green Memorial Park
- 4.) Fleet Vehicles
  - a.) Diesel
  - b.) Gasoline
- 5.) Fire Hydrant
- 6.) Outdoor Lights (Street lights)
  - a.) Street lights are all billed under one meter
    - i.) Kilowatts per hour (kWh) determined by adding average bulb energy use together
- 7.) Traffic Lights
  - a.) Traffic Signal Saint Mary Street East Side
  - b.) Traffic Signal 7th Street
  - c.) Traffic Signal 4th Street
  - d.) Traffic Signal 2nd Street
  - e.) Traffic Signal 3rd Street
  - f.) Traffic Signal Route 15 & Route 192
- 8.) Tri-globe Lights
  - a.) Boulevard Light Control Brown Street
  - b.) Boulevard Light Control North 3rd Street
  - c.) Boulevard Light Control North Front Street
  - d.) Boulevard Light Control North Buffalo Road
  - e.) Boulevard Light Control North 4th Street
  - f.) Boulevard Light Control South 4th Street
  - g.) Boulevard Light Control South 7th Street
  - h.) Boulevard Light Control North 6th Street
  - i.) Boulevard Light Control Saint Louis Street
  - j.) Boulevard Light Control South 2nd Street
  - k.) Boulevard Light Control South 6th Street
  - l.) Boulevard Light Control North 5th Street at Saint Mary Street

**C. Phase 3: Field Report**

The field report focused on the work our group did during the months of March and April 2020. The subsequent work within the first part of the field report included data analysis to understand Lewisburg's energy usage. Methods, Findings, and Conclusion of the raw data was discussed. As a result of our switch to remote learning, our group had to reimagine some of the later goals, specifically in relation to presenting the data. The second part of the field report focused on BVCC's third goal. We wanted to draft a Lewisburg resolution to aid the BVCC in their lobbying efforts towards an official energy audit. Because of Pennsylvania governor Tom Wolf's Stay at Home Orders as of March 28, 2020 due to COVID-19 all Lewisburg Borough Council meetings and work sessions had been cancelled.<sup>2</sup> Our group decided a pre-recorded presentation would suffice as an alternative to an in person meeting.

### **Data Analysis**

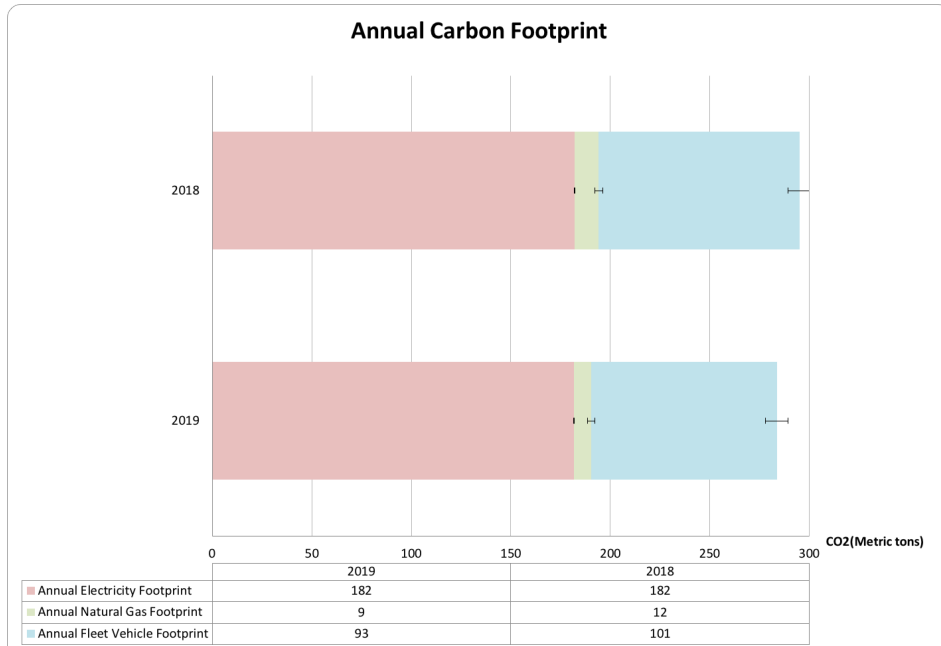
The Energy Tracker Excel spreadsheets and tables were used to generate graphs in order to give both a quantitative and visual representation of our collected data. Once we inputted the data into separate use categories, we created a master municipal total energy uses spreadsheet. A greenhouse gas (GHG) multiplier was used for each energy consumer to calculate the total carbon footprint. The Environmental Protection Agency (EPA) carbon conversion calculators were used to calculate CO<sub>2</sub> in tons.<sup>3</sup>

The resulting graphs represent general tendencies of energy usage and indicate areas for potential improvements. As shown in Figure 1, **the electricity usage of the municipal infrastructure contributed the most carbon emissions (182 metric tons of carbon for both years combined), and the fleet vehicles are the second biggest emitter (93 metric tons in 2018, and 101 metric tons in 2019).**

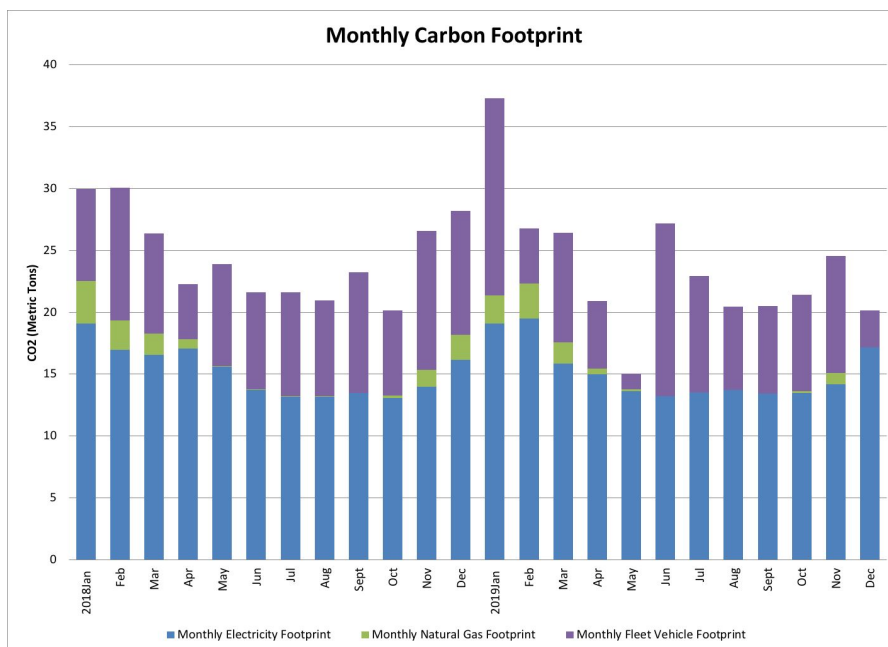
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<sup>2</sup> "Governor Wolf and Health Secretary Expand 'Stay at Home' Order to Beaver, Centre and Washington Counties to Mitigate Spread of COVID-19, Counties Now Total 22." *Governor Tom Wolf*, PA An Official Pennsylvania Government Website, 28 Mar. 2020,

<sup>3</sup> U.S. Environmental Protection Agency. Energy and Environment. 2019. *Greenhouse Gases Equivalency Calculator; Calculations and References*. Washington DC.



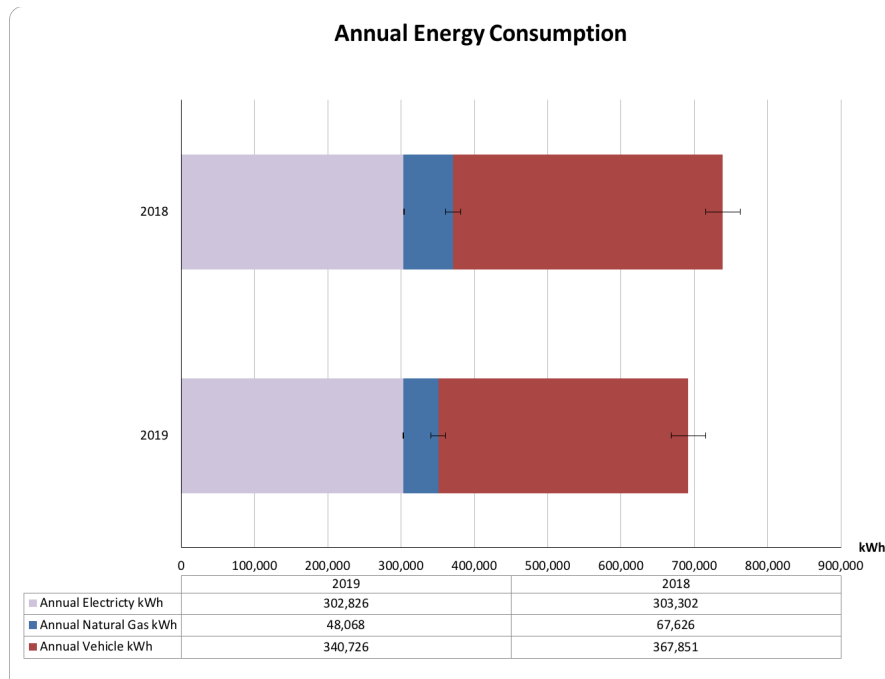
**Figure 1: Annual Carbon Footprint Municipal Total 2018-2019**



**Figure 2: Monthly Carbon Footprint Municipal Total 2018-2019**

Figure 2 shows monthly calculations of carbon emissions. This graph helps to provide clear information about potential seasonal cycles of emissions. **As shown, winters (Dec-Feb) produce higher emissions than summers (Jun-Aug).** The general tendency that more

emissions are likely to be emitted during colder months (due to driving and the availability of sunlight, as well as heating energy use), can be identified in Table 2 in Appendix A.<sup>4</sup>

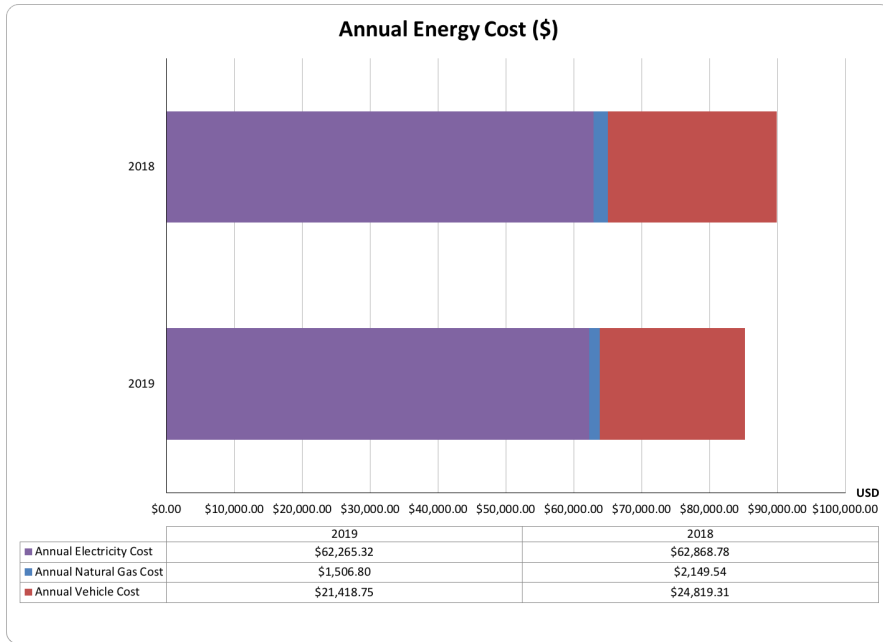


**Figure 3: Annual Energy Consumption in kWh 2018-2019**

Figure 3 provides corresponding energy consumption in kilowatts per hour (kWh). **This figure indicates that fleet vehicles utilize more energy compared to electricity per each unit of carbon.** The graph of monthly energy consumption in kWh is included in Appendix A as Figure 8.

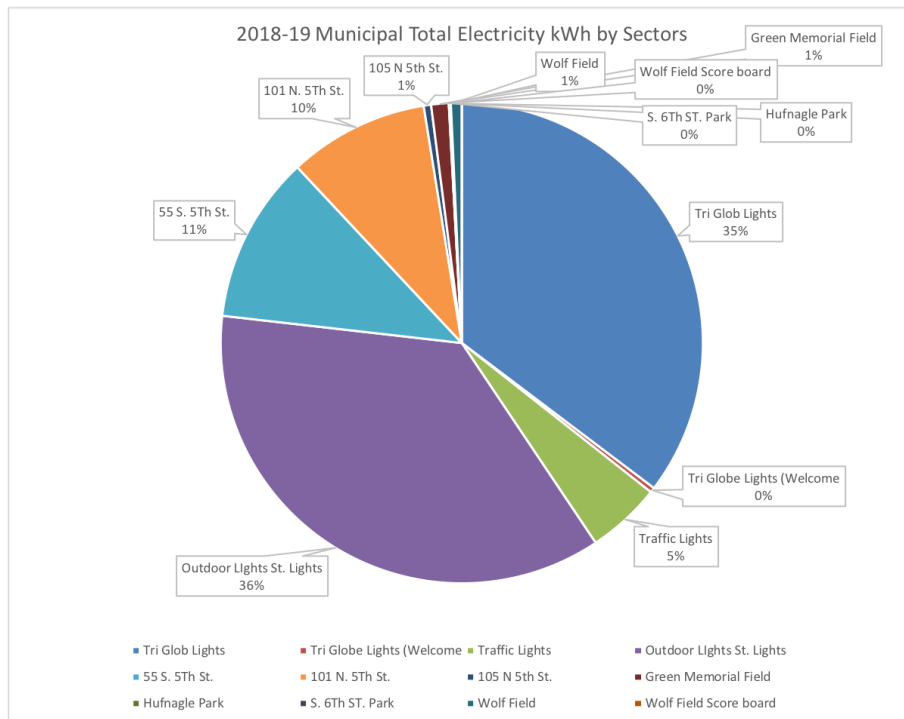
<sup>4</sup> The borough did not have data for natural gas and gasoline for December 2019 and May 2019, so although these two months appear as exceptions in the trend of higher winter emissions they are merely missing data points.





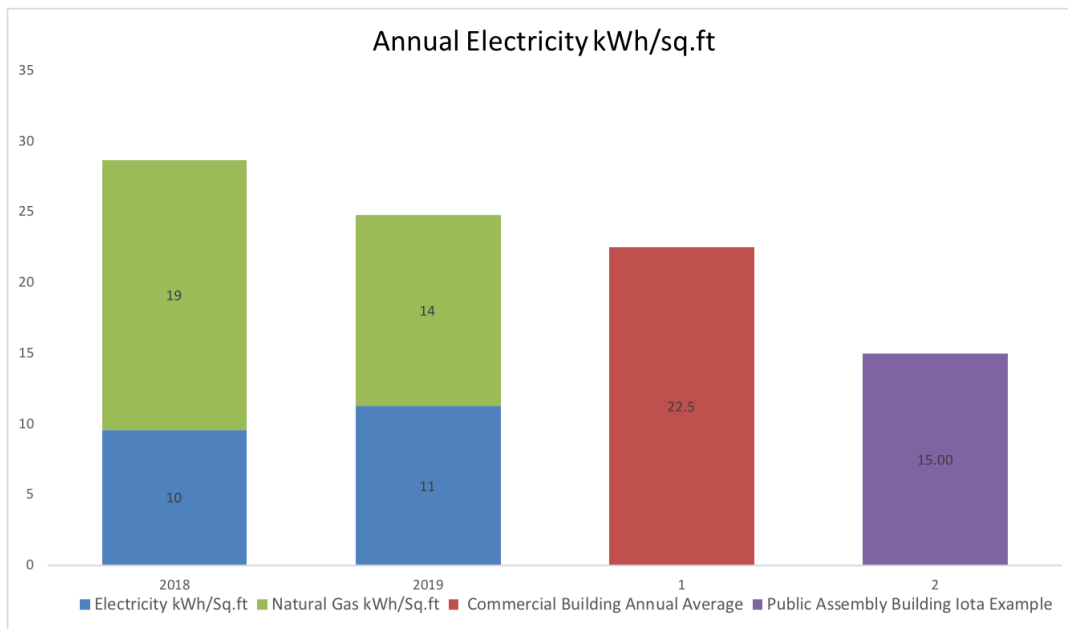
**Figure 4: Annual Energy Cost in Dollars 2018-2019**

Figure 4 provides the financial electricity and energy use costs from the bills. **Compared to the carbon emissions and kWh usages, the electricity sector contributes more as a percentage of overall expenditures.** The monthly “Energy Cost” table is available in Figure 9 in Appendix A. This figure demonstrates relatively stable prices over the last two years, with \$4,794.38 as the lowest and \$5,963.75 as the highest single-month electricity cost.



**Figure 5: Electricity kWh usage by sectors**

Figure 5 elaborates on the percentage of electricity usage by sectors:36% for outdoor and street lights, 35% for Tri Globe lights, 11% from the building at 55 South 5th Street, 10% from the building at 101 North 5th Street, 5% from traffic lights, and 3% from remaining buildings, parks, and fields. **This result suggests a successful energy reduction plan may include determining energy efficiency strategies for all lighting as well as assessing energy efficiency improvement for the two buildings.**



**Figure 6: 55 S 5th St. Electricity kWh/Sq.ft compared to examples**

In Figure 6, The Lewisburg Municipal office building 55 S. 5th St. square footage of 3,500 was divided by the kWh to get the kWh/Sq.ft. The square footage of the building was pulled from Union County Geographic Information Systems (GIS) website<sup>5</sup> The square footage accuracy 55 S. 56th st. from the Union County Geographic Information Systems (GIS) website was verified by David Hines CK-COG zoning officer. A calculation of 28.6 kWh/Sq. Ft. for 2018 and 24.82 kWh/Sq. Ft. for 55 S. 5th St. was calculated. The results were compared to research conducted by Iota Communications, Inc.<sup>6</sup> According to their work “the average number of kilowatt hours per square foot for a commercial building is approximately 22.5 kWh/Sq. Ft. This places 55 South 5th Street at a higher kWh energy consumer than the national average. As a result there may be opportunity to increase energy efficiency at 55 S. 5th St. As suggested by the Davies (2019) study, the possibilities for energy reduction can be found in efficiency of refrigeration & equipment, lighting, cooling, heating, ventilation, and hot water use. The results imply that energy efficiency improvements in traditional construction can be huge if correctly

<sup>5</sup> “Union County Geographical Information System” (GIS). County of Union Pennsylvania. 2020. <http://www.unionco.org/UnionViewer/>

<sup>6</sup> Davies, Michael S. “Benchmarking Commercial Building Energy Use Per Square Foot”, Iota Communications Inc. March 5, 2019.

targeted through additional research in main contributors to energy consumption. If the Borough invests in an official municipal energy audit specific building operations such as lighting, HVAC, ventilation, occupancy of rooms, temperature, humidity, and air quality will be assessed to create a baseline model of the building's energy usage. Once the baseline is completed, targeted energy efficient improvements will be effective in reducing overall costs to the borough.

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### **Missing Data and Possible Errors**

Because the UBA for the Lewisburg Municipal Borough was conducted in the middle of the 2020 COVID-19 quarantine, some utilities data remain missing from our dataset. Missing data was not able to be retrieved during the quarantine as no staff members were in the Borough to obtain the latest utility bills.

### **Table 3: Missing Data summary 2018-2019**

Table 3 shows a list of our collected bills. Our electricity and natural gas bills are relatively complete. We have two missing months in the fleet vehicle section (December and May of 2019) and incomplete data for water and sewage. Missing water and sewage data makes our analysis incomplete and we recommend a reevaluation of these two categories.

### **Energy Tracker Data Analysis Overall Summary**

While the water and sewage data needs careful re-considerations before being utilized for the generation of the resolution, the rest of the municipal bills indicated in the previous graphs are prepared for future data analysis. Based on our data analysis a few different conclusions can be made.

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<sup>7</sup> Davies, Michael S. "Benchmarking Commercial Building Energy Use Per Square Foot", Iota Communications Inc. March 5, 2019.

1. The electricity usage of the municipal infrastructure contributed the most carbon emissions (182 metric tons of carbon for both years combined).
2. Fleet vehicles are the second biggest emitter (93 metric tons in 2018, and 101 metric tons in 2019).
3. Winters (Dec-Feb) produce higher emissions than summers (Jun-Aug).
4. Fleet vehicles utilize more energy compared to electricity per each unit of carbon.
5. Compared to the carbon emissions and kWh usages, the electricity sector contributes more as a percentage of overall expenditures.
6. A successful energy reduction plan may include determining energy efficiency strategies for all lighting as well as assessing energy efficiency improvement for the two buildings.

According to our data, the potential areas of improvements could be: tracking for seasonal considerations, i.e., balancing unnecessary usages in a specific peak time reducing electricity usage (since it is both more expensive and produces more carbon emissions compared to other energy sources); improving outdoor lights, street lights, and Tri Globe lights efficiencies; and purchasing energy efficient equipment, lighting, cooling, heating, ventilation, and hot water for buildings at 55 South 5th Street and 101 South 5th Street. Additionally, our Energy Tracker results allow for further comparison to the results generated by ClearPath, which will allow future projections with energy savings and electricity cost increases, and comparisons to data from other municipalities.

#### **D. Case Studies: Ferguson Township and Loyalsock Township**

As discussed in our field report, we had a conference call with individuals from Ferguson Township, on March March 27, 2020 from 2-4pm, who engaged in their own energy descent program. This call was incredibly valuable for our group as the Ferguson Township team provided guidance and help for our project. Ferguson Township is located near State College with a population around 19,509 residents.<sup>8</sup> Starting in 2017, Ferguson Township conducted their own UBA and adopted a Ferguson Township Resolution to commit to an energy descent strategy. Ferguson Township Resolution 2017-14 commits the Township to developing a strategy aimed at achieving net zero greenhouse gas emissions not later than 2050. Results from the UBA contributed directly to targeted changes within Ferguson Township. The resolution allowed the creation of a Climate Action Committee whose members are working towards a township-wide greenhouse gas inventory. ICLEI's Clearpath software was vital in modeling greenhouse gas projects and aiding the township in identifying high emissions in different sectors (agriculture, business, residential, or schools).<sup>9</sup> This township also was awarded a Certified Gold Community by Sustainable Pennsylvania. This certification is published by the State of Pennsylvania and includes various categories a township must abide by in order to receive the title. These achievements include: Community Engagement; Healthy Communities; Diversity, Equity, and Inclusion; Education; Energy Use, Conservation, and Green Building; Environmental Stewardship; Housing; Land Use and Transportation; and Other Sustainability

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<sup>8</sup> U.S. Census Bureau QuickFacts: Ferguson township, Centre County, Pennsylvania; State College borough, Pennsylvania. (n.d.).

<sup>9</sup> "FergusonTownship Fall 2018 Newsletter". Township of Ferguson Pennsylvania. State College, Pennsylvania.

Innovation.<sup>10</sup> Ferguson Township is still undergoing their energy descent but stands as a model Lewisburg can follow.

Loyalsock Township located near Williamsport, PA is another municipality on which Lewisburg can model its energy descent strategy. With a total population of 11,026 and municipal operations within a two-story building, Loyalsock Township's size makes it somewhat similar to Lewisburg. According to the U.S. Census Bureau as of July 1, 2018 there are roughly 5,730 residents within Lewisburg borough and municipality operations include one main office building and three garages.<sup>11</sup> In 2009, Loyalsock sought assistance from SEDA-Council of Government's Energy Resource Center (ERC) to identify energy conservation methods to help reduce rising municipal energy costs. With the help of ERC, Loyalsock performed a UBA and discovered municipal buildings contributed to above-average loads for electricity and heating oil. These findings resulted in energy reduction strategies focused on energy conservation measures for buildings. In 2011 Loyalstock created the "Lycoming County Energy Plan " that maps out how the county participated in collecting energy data, analyzing the data, and creating an "Energy Plan Strategies and Strategies Action" to address four main goals targeting the reliance on shale gas. Such processes, "seek to utilize renewable energy that uses Lycoming County's existing natural resources effectively, efficiently, and economically and take into consideration various sectors of "residential, commercial, industrial, public/nonprofit, agriculture, and transportation".<sup>12</sup> In 2011, Loyalsock invested in air sealing and insulating targeted leak areas, retrofitting the lighting system to install high efficiency compact fluorescent light bulbs CFL and sensors, and installed a photovoltaic solar array to offset the electrical usage. The estimated cost invested was approximately \$76,530 with an estimated payback of 15 years that will amount to a net savings of \$141,000.<sup>13</sup>

## **V. Our Project Legacy**

### **A. Municipal Energy Audit and Lewisburg Borough Resolution Pre-Recorded Presentation**

As part of our community engagement efforts, our group, on behalf of the BVCC, had planned to attend a Lewisburg Borough Work Session scheduled for April 14, 2020 at 6:30pm to present the Lewisburg UBA. Because of Pennsylvania governor Tom Wolf's Stay at Home Orders as of March 28, 2020 due to COVID-19 all Lewisburg Borough Council meetings and work sessions have been cancelled.<sup>14</sup> Work sessions for the Borough Council are usually held monthly every second Tuesday of each month at 6:30pm when needed.<sup>15</sup> Our group, along with our community partners from the BVCC, intended to present initial findings to the Borough and ask that the Lewisburg Borough consider moving forward on the Municipal Energy Audit and

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<sup>10</sup> College, 3147 Research Drive State, & Maps, P. 16801 U.S.S. map: G. (2019, July 15). Sustainable Pennsylvania Certified Gold Community. Ferguson Township PA.

<sup>11</sup> U.S. Census Bureau QuickFacts: Lewisburg borough, Pennsylvania. (n.d.).

<sup>12</sup> Lycoming County Energy Plan. Department of Planning and Community Development. Adopted by County Resolution 2011-44 on December 22, 2011.

<sup>13</sup> "Managing Energy Use - Best Practices Case Study" SEDA COG. Loyalsock Township. Pennsylvania Energy Partnership. Lycoming County, Pennsylvania.

<sup>14</sup> "Governor Wolf and Health Secretary Expand 'Stay at Home' Order to Beaver, Centre and Washington Counties to Mitigate Spread of COVID-19, Counties Now Total 22." *Governor Tom Wolf*, PA An Official Pennsylvania Government Website, 28 Mar. 2020,

<sup>15</sup> "Borough Council Work Session - Cancelled." *Borough of Lewisburg Pennsylvania*.

eventually on the proposed resolution. Since a physical meeting is not possible, the BVCC can send the pre-recorded presentation to Lewisburg Borough Council members.

The presentation reviews the Lewisburg Borough municipal utility audit findings. The first few slides included a brief introduction of the ENST 411 students and their work with the BVCC. This included the BVCC's three main target goals and the work involved to achieve them. The second set of slides described the process the ENST 411 group underwent to gather data and explain the utility of Energy Tracker. In the third part of our presentation, we explained transcribing, translating, and condensing the municipality bill data onto the Energy Tracker Excel sheets. We show various calculations done in order to create CO2 emission totals. The presentation discusses the collaborative goals of the utility bill audit, municipal energy audit, the adoption of a resolution, and the desire to create a roadmap to reduce energy. The final part of the presentation asks the Lewisburg Borough to move forward in developing and implementing a strategy for greenhouse gas emission reduction, including urging the Lewisburg Borough to adopt a resolution. This resolution could include language taken from the Ferguson Township resolution and the official statement from Mayor Judy Wagner to commit to adopt a climate action resolution.(See Appendix D)<sup>16</sup> We wanted to demonstrate the importance of taking climate action to the Lewisburg Borough Council by presenting data and graphs that convey how much energy is being used, GHG emissions data, and how much money the Borough could save if they invest in energy reduction. BVCC can also appeal to the Borough Council's values and commitment to sustaining the future health and wellbeing of their community. We hope the prerecorded video presentation will help highlight and show the various ways in which community members are passionate and committed to sustainability. We believed that without the video, the significance and meaning behind the resolution will not be fully understood.

### **Lewisburg Resolution**

The hope is that Lewisburg Borough Council, with the help of community partners like BVCC and Bucknell University, will move forward on a pathway for energy descent. One way for the Borough to make a commitment to reducing carbon is to adopt a resolution recognizing climate change as a real threat to the Lewisburg Borough and to make a commitment to reducing carbon emissions. The resolution would commit the Lewisburg Borough to creating a pathway to reducing energy and make the Borough more sustainable. The resolution is also symbolic as it shows Lewisburg Borough's commitment to sustainability and carbon reduction. Not only would a resolution be important to the local community of Lewisburg but also sets a precedent to other towns in the region. This would make Lewisburg a leader in the region and the state in the pursuit of sustainability goals and engaging stakeholders in dialogue to "develop courses of action to reduce the impact of human-induced climate change to Pennsylvania".<sup>17</sup> An example of a Borough resolution text was borrowed with permission from Ferguson Township supervisor Peter Buck as a template for a Lewisburg Borough resolution. (See Appendix D) The Ferguson Township Resolution recognizes global warming is caused by greenhouse gas (GHG) emissions and is a threat to Ferguson Township. The resolution commits Ferguson Township to begin a

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<sup>16</sup> Wagner, Judy. "Proclamation Regarding Climate Change Initiatives in the Borough of Lewisburg." Mayor Judy Wagner Wrote Proclamation in Response to Green New Deal Lewisburg Climate Strike. Lewisburg Borough. Lewisburg PA. March 20, 2019. Document received via email from Mayor Wagner.

<sup>17</sup> "Resolution 2017-14", (June 19, 2017), Township of Ferguson.

strategy reducing GHG emissions. The Ferguson Township Resolution could be modified by the Lewisburg Borough Council in order to cater to the Borough's unique needs.

The governmental process for adopting a new resolution requires BVCC to propose the resolution to the Lewisburg Borough Council and the Lewisburg Community Development and Planning Committee. The first step is to send the Lewisburg Borough Council a proposal to adopt a new resolution, in this case the resolution to adopt an energy descent strategy to reduce GHG emissions. If the Lewisburg Borough Council deems the resolution of merit, a council member will make a motion to adopt a draft of the resolution and that the resolution be sent to the Lewisburg Community Development and Planning Committee. This motion can be done by addressing the Lewisburg Borough Council Chair and saying "I move that the Lewisburg Borough Council make a commitment to reduce GHG emissions by adopting this draft resolution and that the draft resolution be sent to the Lewisburg Community Development and Planning Committee for review". Another Lewisburg Borough Council member must second the motion by saying, "I second the motion that Lewisburg Borough Council make a commitment to reduce GHG emissions by adopting this draft resolution and that the draft resolution be sent to the Lewisburg Community Development and Planning Committee for review". At that time the Lewisburg Planning Commission Chair would say, "Time for discussion". After discussion the Lewisburg Borough Council Chair would call for a vote by saying, "All those in favor of adopting the draft resolution be sent to the Lewisburg Community Development and Planning Committee for review say I". Votes for would be counted. The chair then says, "All those opposed". Votes opposed would be counted. If the majority voted in favor of the motion the chair would say "Motioned Passed". This would put the resolution on the agenda of the Lewisburg Community Development and Planning Committee and it would go into a work session for review.

Once the new resolution was drafted to fit the needs and desires of the Lewisburg Borough, the Resolution would be brought before the Lewisburg Borough Council to be reviewed in a work session. Once the resolution was reviewed and approved in the Lewisburg Borough Council work session, the Lewisburg Borough Solicitor would have to review it to make sure the resolution does not conflict with local and federal laws. After the resolution is approved by the borough solicitor it would go up for a final vote with the Lewisburg Borough Council. The resolution at this point would be presented by the Lewisburg Community Development and Planning Committee and would be added to the Lewisburg Borough Council's agenda for final vote and approval. During this entire process the BVCC and interested community partners and members can attend meetings and solicit borough council members to express the importance of adopting a resolution to reduce GHG emissions and to create a road map for Lewisburg municipal energy descent. An example of parliamentary procedure for meetings otherwise known as "Robert's Rules of Order" is described in the Appendix. (See Appendix E)

## **B. A one-year ClearPath software license purchased for the Borough**

ClearPath is a greenhouse gas inventory software produced by the organization ICLEI, which our partner BVCC originally considered having us use this semester, but opted in favor of the freely available Energy Tracker. "ClearPath™ is the leading online software platform for completing greenhouse gas inventories, forecasts, climate action plans, and monitoring at the

community-wide or government-operations scales”.<sup>18</sup> The benefit of using Clear Path is it is a powerful software tool that can be used to compare our UBA to national averages and townships of a similar size, demographics, and geography. ClearPath also comes with support from ICLEI which can be beneficial when questions arise.<sup>19</sup> Ferguson Township was one of the pilot programs within ICLEI’s City-University Partnership in Sustainability program which aims to partner local towns with various institutions to aid in climate resilience planning and implementation.<sup>20</sup> Members from Ferguson Township have expressed the opportunity to serve as mentors to the BVCC and the Borough Council for their use of the ClearPath software.

Professor Wooden and Bucknell University Environmental Studies and Sciences department purchased the Clear Path software for the Borough. The ClearPath software cost \$600. (See Appendix G) The Lewisburg Borough holds the license to ClearPath and Bucknell University and BVCC have access as administrators. While we purchased the ClearPath software we did not have time to input Lewisburg specific data. We recommend our community partners take the next steps in utilizing the ClearPath software. Professor Wooden and Professor Kevin Gilmore, in Bucknell’s Environmental Engineering Department (and affiliated faculty in the Department of Environmental Studies and Sciences), identified a DEP grant that could cover future software costs, the DEP Local Government Climate Action Plan Program. Within this grant, ICLEI provides the Clear Path software to recipients of the award. Bucknell Environmental Engineering applied to it last fall 2019 and was waitlisted for the program. Professor Gilmore has stated intentions to reapply for the Fall 2020 year, and if he is able to do so will seek to either get the software fee reimbursed or covered for an additional year license. While such goals reach beyond the scope of our project we recommend our community partners to get in touch with Professor Wooden and Professor Gilmore to apply for the DEP grant and continue work on ClearPath to develop greenhouse gas inventories, projections, and climate action plan development.

### **C. Archival Material**

A key step within this final report is to consolidate all prior work to make it easily accessible and legible. All project materials will be submitted to BVCC and the Bucknell University Environmental Studies and Science Department in the hopes to continue the project into its next phase. This includes consolidating and clearly labeling the Excel spreadsheets and sending a zipped folder of PDFs of all our project documents. Over the course of the semester a few community partners have referenced having difficulties accessing our google docs folder given its security features. So turning all of our documents into PDFs and sending them to the BVCC, along with the link to the reorganized google folder, will ensure all documents can be assessed by our community partners in the future.

Within the “Research Design” folder we will place our literature review material, brainstorming notes, initial project description, peer reviewed notes, and project design presentation. The folder entitled “Data” will hold all of the spreadsheets, graphs, and raw data we have cataloged. Within the “Field Report Section” we will include our original and revised field

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<sup>18</sup> “ClearPath.” *ClearPath AN ICLEI USA TOOL*, ICLEI USA Local Governments for Sustainability.

<sup>19</sup> “ClearPath.” *ClearPath AN ICLEI USA TOOL*, ICLEI USA Local Governments for Sustainability

<sup>20</sup> “City-University Partnerships in Sustainability.” *City-University Partnerships in Sustainability*, ICLEI USA Local Governments for Sustainability.



report, peer reviewed comments, and meeting notes with Ferguson Township. The “Final Report” folder will include the final report, peer reviewed comments, and the final presentation.

## **VI. Conclusion**

In conclusion we would like to thank everyone who helped us complete this project. Given the short time span of a semester we achieved data collection and analysis, collected case studies as references, and cataloged all Lewisburg Borough municipality utility bills. We left the BVCC with first steps towards a Lewisburg Resolution and purchased Clear Path software. We created this final report to encapsulate all the hard work we have done throughout the semester. While it does not go into full detail of all our work, the Project Design and Field Report documents can be referenced for additional information. It has been an honor to work with such dedicated and loyal community members. We are wishing the best of luck to the BVCC and other community members who will continue the fight towards climate change resilience in Lewisburg.

## **VII. Appendix**

- A. Supplemental Data Analysis**
- B. Contact Information**
- C. Maps and Photos of the Area**
- D. Mayor Judy Wagner’s Proclamation**
- E. Ferguson Township Resolution**
- F. Robert’s Rules of Order**
- G. ICLEI ClearPath Software Invoice**
- H. Bibliography**

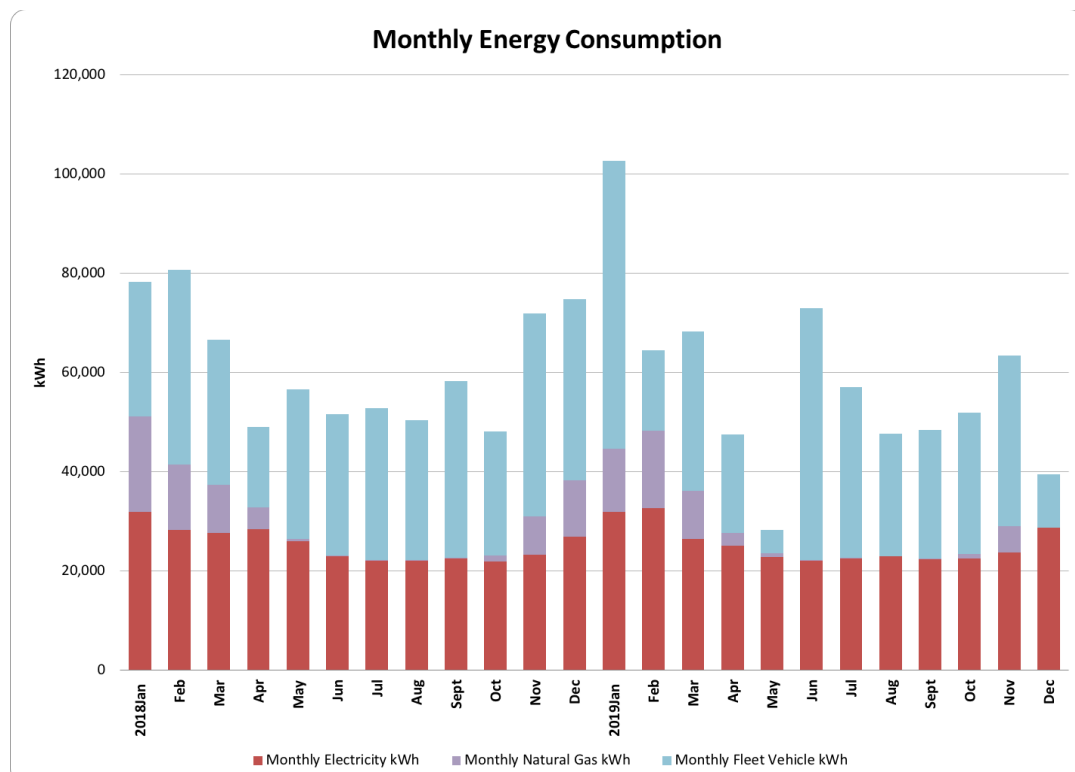
## Appendix A: Supplemental Data Analysis

<b>Energy Conversion Chart</b>		
<b>Fuel Type</b>	<b>kWh Equivalent Conversion</b>	<b>Carbon Conversion</b>
Oil (Gal):	1 Gal = 40.65 kWh	1 Gal = .0101 tonnes
Natural Gas (Ccf):	1 Ccf = 30.04275 kWh	1 Ccf = .0054 tonnes
Electricity (kWh):		1 kWh = .0006 tonnes
Gasoline, Regular unleaded	1 Gal = 33.44 kWh	1 Gal = .0089 tonnes
Biodiesel B20	1 Gal = 37.12 kWh	1 Gal = .0102 tonnes

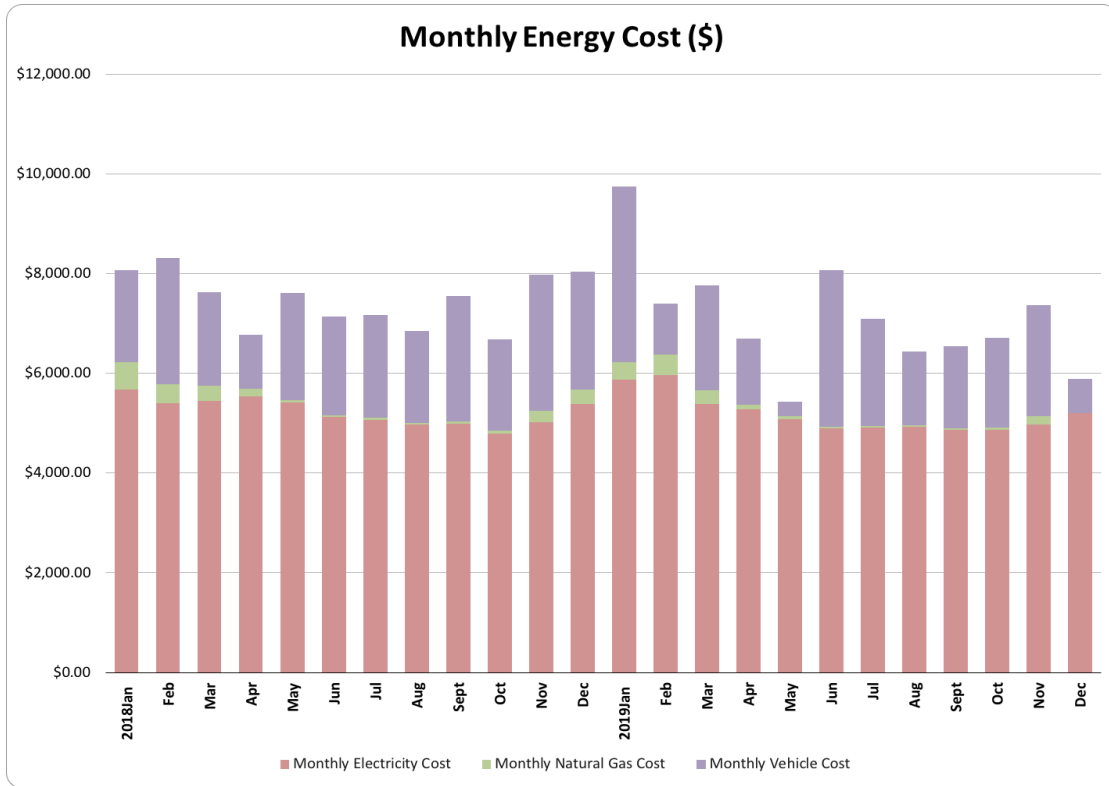
**Table 1: Energy Conversion Data Used**

Street/ Kwh U	Tri Glob Light	Tri Globe Ligh	Traffic Lights	Outdoor Light	55 S. 5Th St.	101 N. 5Th St.	105 N 5th St.	115 N 5Th St.	205 N 5Th St.	Green Memor	Hufnagle Park	5. 6Th ST.	Park Wolf Field	Wolf Field Scc St.	Mary St. Fi	Sum
January	15,309	102	1,375	9,146	2,137	3,559	9			62	0	6	107	0		31,812.00
February	10,656	106	1,335	9,146	2,238	4,046	552			37	0	48	102	0		28,266.00
March	10,496	100	1,190	9,146	2,866	3,434	198			51	1	45	88	0		27,615.00
April	10,044	82	1,366	9,146	3,388	4,018	14			200	0	65	95	0		28,418.00
May	8,432	80	1,244	9,146	3,231	2,648	21			807	4	5	338	0		25,958.00
June	7,390	72	1,244	9,146	2,592	1,014	8			977	0	19	435	0		22,897.00
July	6,353	64	1,190	9,146	2,775	1,086	9			986	1	25	349	3		21,987.00
August	6,523	64	1,213	9,146	3,473	1,133	14			143	6	27	218	0		21,960.00
September	7,025	72	1,228	9,146	3,502	1,250	18			68	0	22	102	0		22,433.00
October	7,426	82	1,202	9,146	2,485	1,175	11			72	4	33	164	0		21,800.00
November	8,543	90	1,259	9,146	2,195	1,809	11			86	0	30	102	0		23,271.00
December	8,930	98	1,240	9,146	3,209	3,377	636			87	0	61	101	0		26,885.00
Sum	107,127	1,012	15,088	109,752	34,091	28,549	1,501	0	0	3,576	16	386	2,201	3	0	303,302.00

**Table 2: 2018 Municipal Total Electricity Raw Data**



**Figure 8: Monthly Energy Consumption in kWh 2018-2019**

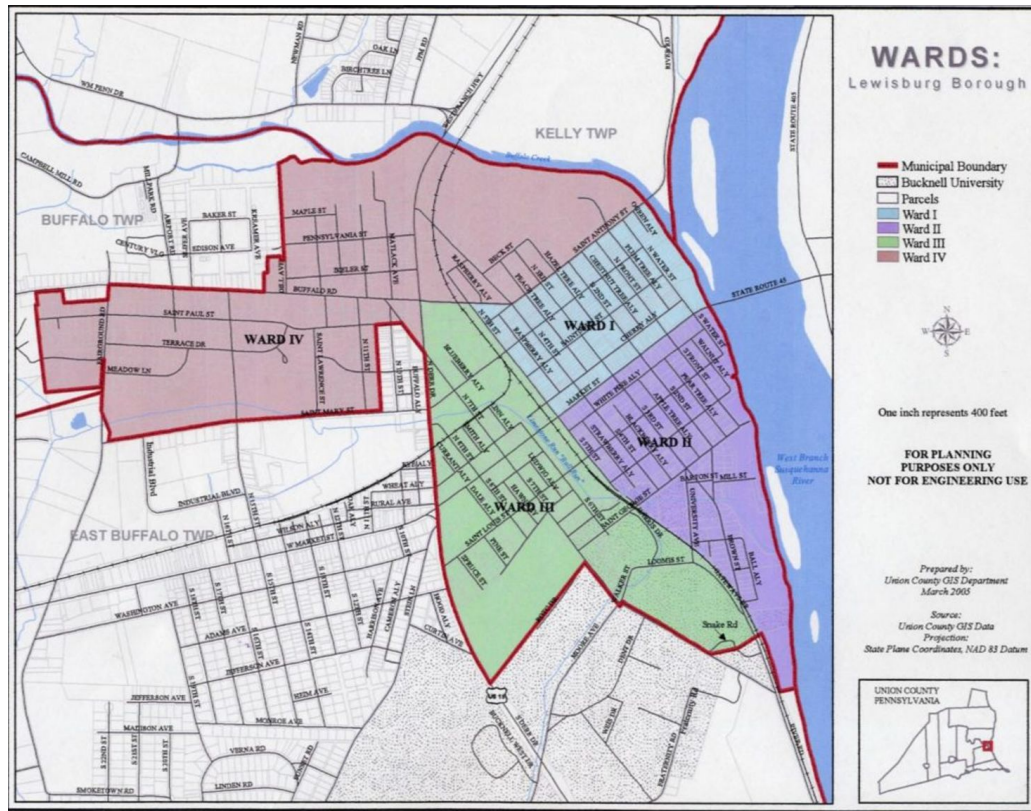


**Figure 9: Monthly Energy Cost in Dollars 2018-2019**

## Appendix B: Contact Information

- Marie Catanese: Bucknell University ENST 411 Bucknell student
  - msc022@bucknell.edu
- Elijah Farrell: Bucknell University ENST 411 Bucknell student
  - egf003@bucknell.edu
- Muxi You: Bucknell University ENST 411 Bucknell student
  - my016@bucknell.edu
- Amanda Wooden: Bucknell University Associate Professor of Environmental Studies and Science
  - aw021@bucknell.edu
- Bill Lowthert, Lewisburg Borough Manager
  - wlowthert@lewisburgborough.org
- Jordi Comas: Lewisburg Borough Council Member and community member
  - jordi@jordicomas.org
- Sam Pearson: Lewisburg Neighborhoods and community member
  - elmstreet@dejazzd.com
- Sandy Field: Climate activist and community member
  - sandyfna@yahoo.com
- Kim Wheeler: Special Project Coordinator Lewisburg Borough
  - kwheeler@lewisburgborough.org
- Stacy Richard, Special Program Auditor Lewisburg Borough
  - srichard@ptd.net
- Andrew Stuhl: Bucknell University Associate Professor of Environmental Studies and Science, Lewisburg Green New Deal, Sunrise Movement Hub Leader
  - ats011@bucknell.edu
- Peter Buck, Academic Programs Manager, Penn State's Sustainability Institute Affiliate Faculty, Educational Theory and Policy, President-Elect, Pennsylvania Environmental Resource Consortium
  - peterbuck@psu.edu
- Pam Adams, Central Region Council of Governments (CRCOG) Sustainability Planner
  - padams@crcog.net
- Brandi Robinson, Assistant Teaching Professor Department of Geography, John A. Dutton e-Education Institute, John and Willie Leone Family Department of Energy and Mineral Engineering.
  - bjn151@psu.edu
- Kale Roberts, Senior Program Officer, Network Relations ICLEI-Local Governments for Sustainability USA
  - kale.roberts@iclei.org
- Kevin Gilmore, Bucknell University Associate Professor of Civil and Environmental Engineering
  - kg021@bucknell.edu

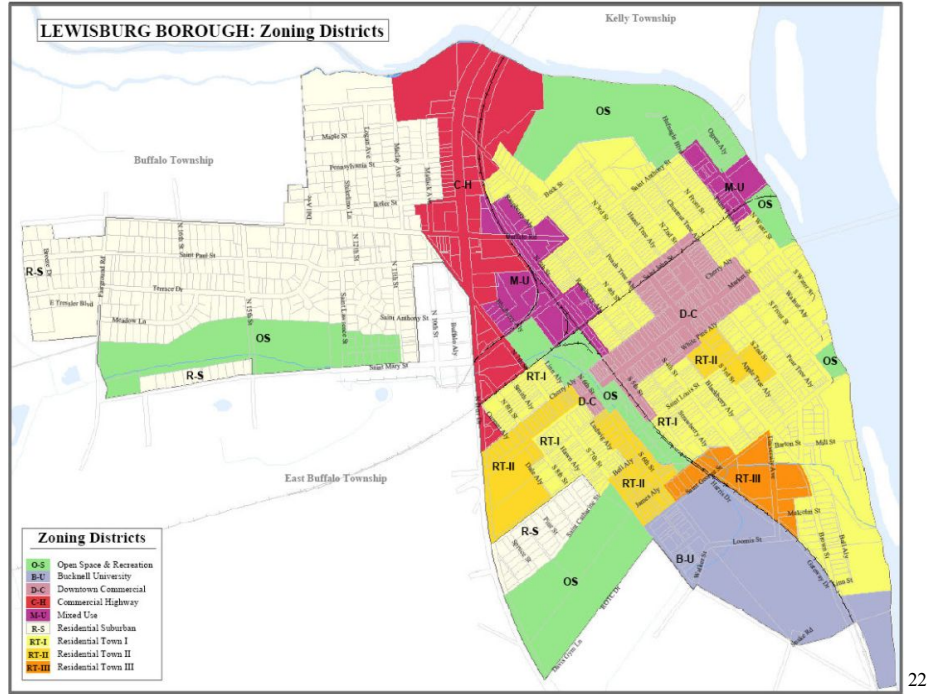
## Appendix C: Maps and Photos of Area



21

**Map 1:** Lewisburg Political Boundaries

<sup>21</sup> Officials & Administration. (n.d.). Copyright Borough of Lewisburg Pennsylvania Retrieved from <https://www.lewisburgborough.org/government/officials-administration/>

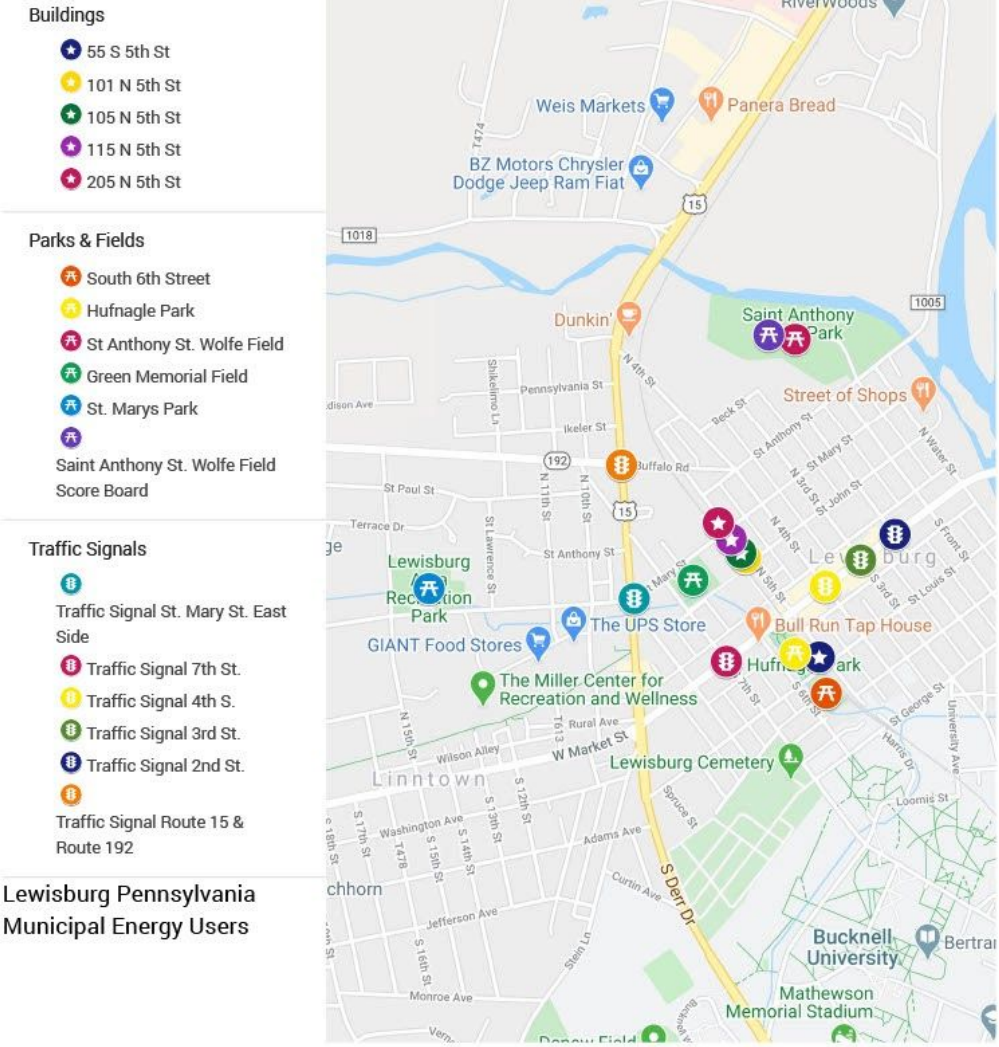


22

**Map 2:** Lewisburg Zoning Districts

<sup>22</sup> Officials & Administration. (n.d.). Copyright Borough of Lewisburg Pennsylvania Retrieved from <https://www.lewisburgborough.org/government/officials-administration/>

# Lewisburg Municipal Utility Audit



Map 3: Lewisburg Municipal Energy Users by category.



**Photo 1:** Lewisburg Borough Main Municipality Office 55 S. 5th St.



**Photo 2:** Huffnagle Park





**Photo 3: St. Mary Park**



**Photo 4: 101 N 5th St.**



**Photo 5:** 105 N 5th St.



**Photo 6:** 115 N 5th St.



**Photo 7:** 205 N 5th st.



**Photo 8:** Tri-Globe Lights



**Photo 9:** Lewisburg Traffic Lights Route 15 & Market



**Photo 10:** Overhead St. Lights

## Appendix D: Mayor Judy Wagner Proclamation



Office of the Mayor  
**Borough of Lewisburg**  
55 S. Fifth Street • Lewisburg, Pennsylvania 17837-1867  
Telephone (570) 523-3614 • Fax (570) 524-2270

### Proclamation Regarding Climate Change Initiatives in the Borough of Lewisburg

Whereas, the Constitution of the Commonwealth of Pennsylvania, Article 1, Section 27 states that "Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustees of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people;" and

Whereas, the transition to renewable energy will promote employment opportunities and sustainable growth in the Borough of Lewisburg, the Union County, the Susquehanna Valley and the Commonwealth of Pennsylvania, will facilitate local control and ownership over energy options, and bring tangible benefits to low-income residents and others who have historically been disadvantaged by fossil fuel-based energy systems; and

Whereas, Pennsylvania contributes approximately 1% of global GHG emissions, which, according to the Commonwealth's Third Pennsylvania Climate Impacts Assessment Report, is affecting agriculture, energy, human health, infrastructure, recreation, water quality, flooding, forest, and other ecosystems in Pennsylvania, and human health and ecological systems around the world; and

Whereas, a growing number of local government entities and private and public sector organizations around the world have committed to begin planning to reduce their GHG emissions; and

Whereas, over 1000 mayors have signed onto the U.S. Conference of Mayors' Climate Protection Agreement [100 US municipalities have promised to transition to 100 percent renewable energy by 2050 at the latest]; and



Office of the Mayor  
**Borough of Lewisburg**

55 S. Fifth Street • Lewisburg, Pennsylvania 17837-1867  
Telephone (570) 523-3614 • Fax (570) 524-2270

Whereas, green building practices and standards have been established, and the cost of non-fossil fuel generated energy including solar, wind, and geothermal power have fallen to the point that the replacement of fossil-fuel generated energy with renewable energy is reaching price parity with non-renewable energy; and

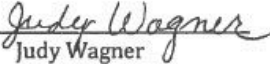
Whereas, universities in Pennsylvania, including Bucknell, provide jobs that research, support, and educate Pennsylvania's renewable energy industry and conduct international, national, state-level, and local climate assessments and planning assistance; and

Whereas, green building and renewable energy industries employ thousands of Pennsylvanians; and

Whereas, the Lewisburg community recognizes the significant potential harm that the climate crisis represents for us; and that our community can play an important role in reducing GHG pollution and the global harm it is already causing; and

Now, therefore, be it proclaimed that I, Judy Wagner, Mayor of the Borough of Lewisburg that the Lewisburg Borough must play a part in the Climate Protection movement by working toward adopting a climate action resolution and I urge all residents in for the Borough of Lewisburg to act to address the threat that climate change poses to life, liberty and the pursuit of happiness.

September 20, 2019.

  
\_\_\_\_\_  
Judy Wagner

## Appendix E: Ferguson Township Resolution

### RESOLUTION 2017-14

**A RESOLUTION OF THE TOWNSHIP OF FERGUSON, CENTRE COUNTY, PENNSYLVANIA COMMITTING THE TOWNSHIP TO DEVELOPING AND IMPLEMENTING A STRATEGY TO ACHIEVE NET ZERO GREENHOUSE GAS EMISSIONS NO LATER THAN 2050; TO BECOME A LEADER IN THE REGION AND COMMONWEALTH IN PURSUING GOALS ESTABLISHED BY SAID STRATEGY; AND TO ENGAGE OTHER STAKEHOLDERS IN A DIALOGUE TO DEVELOP COURSES OF ACTION TO REDUCE THE IMPACT OF HUMAN-INDUCED CLIMATE CHANGE TO PENNSYLVANIA AND PEOPLE AND PLACES AROUND THE WORLD.**

**WHEREAS**, the 21<sup>st</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change in Paris agreed to hold the increase in the global average temperature to well below 2°C above pre-industrial levels, and to pursue efforts to limit the increase to 1.5°C above pre-industrial levels in order to prevent catastrophic harm to people and ecological systems on which life depends; and

**WHEREAS**, the United Nations Environment Program's 2016 "Bridge the Gap Report" concluded that, in order to have a 50% chance of limiting warming to 1.5°C, global carbon dioxide emissions from all nations must be net zero between 2045 and 2050, and to have a 66% chance of limiting warming to 2°C, carbon dioxide emissions from all sources must be net zero between 2060 and 2075. Moreover, to achieve these warming limits, many of the scenarios in the relevant literature that successfully limit warming to below 2°C assume that the use of negative emissions technologies is necessary; and

**WHEREAS**, both the magnitude and speed needed to achieve these reductions necessary to prevent dangerous human-induced warming urgently requires all local government entities to cooperate with other levels of government, the private sector, educational institutions, agriculture, and others to rapidly develop strategies to reduce greenhouse gas (GHG) emissions to net zero to achieve the Paris Agreement's warming limit goals; and

**WHEREAS**, any delay in reducing GHG emissions makes the Paris Agreement's warming limit goals much more difficult, if not impossible to achieve, as existing GHG emissions levels are rapidly reducing the shrinking carbon budgets that must constrain total global GHG emissions to achieve said goals; and

**WHEREAS**, a growing number of local government entities and private and public sector organizations around the world have committed to begin planning to reduce their GHG emissions to net zero as quickly as possible but no later than 2050 or, at minimum, achieve 100% non-fossil fuel generated electricity by that date; and

**WHEREAS**, the Constitution of the Commonwealth of Pennsylvania, Article 1, Section 27 guarantees that, "The people have a right to clean air, pure water, and to the preservation of natural, scenic, historic, and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustees of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people;" and

**WHEREAS**, Pennsylvania contributes approximately 1% of global GHG emissions, which, according to the Commonwealth's Third Pennsylvania Climate Impacts Assessment Report, is affecting agriculture, energy, human health, infrastructure, recreation, water quality, forests, and other ecosystems in Pennsylvania, and human health and ecological systems around the world. Despite this, neither the Pennsylvania state government nor the clear majority of Pennsylvania local governments have established a GHG emissions strategy designed to achieve a GHG reduction target consistent with the urgent need to prevent very dangerous climate change; and

**WHEREAS**, green building practices and standards have been established, and the cost of non-fossil fuel generated energy including solar wind and geothermal power have fallen to the point that the



replacement of fossil-fuel generated energy with renewable energy is reaching price parity with non-renewable energy; and

**WHEREAS**, green building and renewable energy industries employ thousands of Pennsylvanians; and

**WHEREAS**, agriculture and forestry have played important roles in Ferguson Township's economy and culture for generations, and are integral in sinking carbon, providing additional ecosystem services, beauty, and recreation, as well as afford a high quality of life for people and our environment; and

**WHEREAS**, universities in Pennsylvania, including Penn State University provide jobs that research, support, and educate Pennsylvania's renewable energy industry and conduct international, national, state-level, and local climate assessments and planning assistance; and

**WHEREAS**, the Township of Ferguson is a Home Rule Municipality whose governing Charter includes a Community and Environmental Bill of Rights guaranteeing a sustainable energy future.

**NOW, THEREFORE, BE IT HERE RESOLVED:**

1. The Township of Ferguson shall a) Immediately begin to develop a strategy to achieve net zero GHG emissions as quickly as feasible, but no later than 2050, and b) commit to achieving the GHG emissions reductions target determined by said strategy and by the date identified therein; and
2. Lead by example to rapidly pursue these goals in a manner that is transparent, fair, and economically responsible; and
3. Engage peer governments, non-governmental organizations, businesses, and universities to raise awareness and identify courses of action to reduce the impacts and embrace the opportunities created by human-induced warming to Pennsylvania and places around the world.

**RESOLVED** this 19<sup>th</sup> day of June, 2017.

**FERGUSON TOWNSHIP  
BOARD OF SUPERVISORS**

By:   
Steve Miller, Chairman  
Board of Supervisors

[ SEAL ]

ATTEST:

  
David G. Pribulka, Secretary

## Appendix F: Robert's Rules of Order

Remember, these processes are designed to ensure that everyone has a chance to participate and to share ideas in an orderly manner. Parliamentary procedure should not be used to prevent discussion of important issues.

Board and committee chairpersons and other leaders may want to get some training in meeting facilitation and in using parliamentary procedure. Additional information on meeting processes, dealing with difficult people, and using *Robert's Rules* is available from district office staff and community resources such as the League of Women Voters, United Way and other technical assistance providers. Parliamentary Procedure at a Glance, by O. Garfield Jones, is an excellent and useful guide for neighborhood association chairs.

### Tips in Parliamentary Procedure

The following summary will help you determine when to use the actions described in *Robert's Rules*.

- **A main motion must be moved, seconded, and stated by the chair before it can be discussed.**
- **If you want to move, second, or speak to a motion, stand and address the chair.**
- **If you approve the motion as is, vote for it.**
- **If you disapprove the motion, vote against it.**
- **If you approve the idea of the motion but want to change it, amend it or submit a substitute for it.**
- **If you want advice or information to help you make your decision, move to refer the motion to an appropriate quorum or committee with instructions to report back.**
- **If you feel they can handle it better than the assembly, move to refer the motion to a quorum or committee with power to act.**
- **If you feel that there the pending question(s) should be delayed so more urgent business can be considered, move to lay the motion on the table.**
- **If you want time to think the motion over, move that consideration be deferred to a certain time.**
- **If you think that further discussion is unnecessary, move the previous question.**
- **If you think that the assembly should give further consideration to a motion referred to a quorum or committee, move the motion be recalled.**
- **If you think that the assembly should give further consideration to a matter already voted upon, move that it be reconsidered.**
- **If you do not agree with a decision rendered by the chair, appeal the decision to the assembly.**
- **If you think that a matter introduced is not germane to the matter at hand, a point of order may be raised.**
- **If you think that too much time is being consumed by speakers, you can move a time limit on such speeches.**
- **If a motion has several parts, and you wish to vote differently on these parts, move to divide the motion.**

### PARLIAMENTARY PROCEDURE AT A GLANCE

TO DO THIS	YOU SAY THIS	MAY YOU INTERRUPT SPEAKER	MUST YOU BE SECONDED	IS MOTION DEBATABLE	WHAT VOTE REQUIRED
Adjourn meeting*	I move that we adjourn	No	Yes	No	Majority
Recess meeting	I move that we recess until...	No	Yes	No	Majority
Complain about noise, room temperature, etc.*	Point of privilege	Yes	No	No	No vote
Suspend further consideration of something*	I move we table it	No	Yes	No	Majority
End debate	I move the previous question	No	Yes	No	2/3 vote
Postpone consideration of something	I move we postpone this matter until...	No	Yes	Yes	Majority
Have something studied further	I move we refer this matter to committee	No	Yes	Yes	Majority
Amend a motion	I move this motion be amended by...	No	Yes	Yes	Majority
Introduce business (a primary motion)	I move that...	No	Yes	Yes	Majority
Object to procedure or personal affront*	Point of order	Yes	No	No	No vote, Chair decides
Request information	Point of information	Yes	No	No	No vote
Ask for actual count to verify voice vote	I call for a division of the house	No	No	No	No vote
Object consideration of undiplomatic vote*	I object to consideration of this question	Yes	No	No	2/3 vote
Take up a matter previously tabled*	I move to take from the table...	No	Yes	No	Majority
Reconsider something already disposed of*	I move we reconsider our action relative to...	Yes	Yes	Yes	Majority
Consider something already out of its schedule*	I move we suspend the rules and consider	No	Yes	No	2/3 vote
Vote on a ruling by the Chair	I appeal the Chair's decision	Yes	Yes	Yes	Majority

\*Not amendable

### PARLIAMENTARY PROCEDURE AT A GLANCE

		Debatable	Amendable	Can Be Reconsidered	Requires 2/3 Vote
Privileged Motions	Fix Time at Which to Adjourn	No	Yes	No	No
	Adjourn	No	No	Yes	No
	Question of Privilege	No	Yes	Yes	No
	Call for Order of Day	No	No	Yes	No
Incidental Motions	Appeal	Yes	No	Yes	No
	Objection to Consideration of a Question	No	No	Yes	Yes
	Point of Information	No	No	No	No
	Point of Order	No	No	No	No
	Read Papers	No	No	Yes	No
	Suspend the Rules	No	No	No	Yes
	Withdraw a Motion	No	No	Yes	No
Subsidiary Motions	Lay on the Table	No	No	Yes	No
	The Previous Question (close debate)	No	No	Yes	Yes
	Limit or Extend Debate	No	Yes	Yes	Yes
	Postpone to a Definite Time	Yes	Yes	Yes	No
	Refer to Committee	Yes	Yes	Yes	No
	Amend the Amendment	Yes	No	No	No
	Amendment	Yes	Yes	Yes	No
	Postpone Indefinitely	Yes	No	Yes	No
Main Motion	Main or Procedural Motion	Yes	Yes	Yes	No

This table presents the motions in order of precedence. Each motion takes precedence over (i.e. can be considered ahead of) the motions listed below it. No motion can supersede (i.e. be considered before) any of the motions listed above it.

**PLEASE NOTE:** many organizations use only the Main Motion and Subsidiary Motions, handling other matters on an informal basis.

## IN THE MEETING

### ***TO INTRODUCE A MOTION:***

Stand when no one else has the floor.

Address the Chair by the proper title.

Wait until the chair recognizes you.

- Now that you have the floor and can proceed with your motion say "I move that...", state your motion clearly and sit down.
- Another member may second your motion. A second merely implies that the seconder agrees that the motion should come before the assembly and not that he/she is in favor of the motion.
- If there is no second, the Chair says, "The motion is not before you at this time." The motion is not lost, as there has been no vote taken.
- If there is a second, the Chair states the question by saying "It has been moved and seconded that ... (state the motion). . ., is there any discussion?"

### ***DEBATE OR DISCUSSING THE MOTION:***

- The member who made the motion is entitled to speak first.
- Every member has the right to speak in debate.
- The Chair should alternate between those "for" the motion and those "against" the motion.
- The discussion should be related to the pending motion.
- Avoid using a person's name in debate.
- All questions should be directed to the Chair.
- Unless there is a special rule providing otherwise, a member is limited to speak once to a motion.
- Asking a question or a brief suggestion is not counted in debate.
- A person may speak a second time in debate with the assembly's permission.

### ***VOTING ON A MOTION:***

- Before a vote is taken, the Chair puts the question by saying "Those in favor of the motion that ... (repeat the motion)... say "Aye." Those opposed say "No." Wait, then say "The motion is carried," or "The motion is lost."
- Some motions require a 2/3 vote. A 2/3 vote is obtained by standing
- If a member is in doubt about the vote, he may call out "division." A division is a demand for a standing vote.
- A majority vote is more than half of the votes cast by persons legally entitled to vote.
- A 2/3 vote means at least 2/3 of the votes cast by persons legally entitled to vote.
- A tie vote is a lost vote, since it is not a majority.

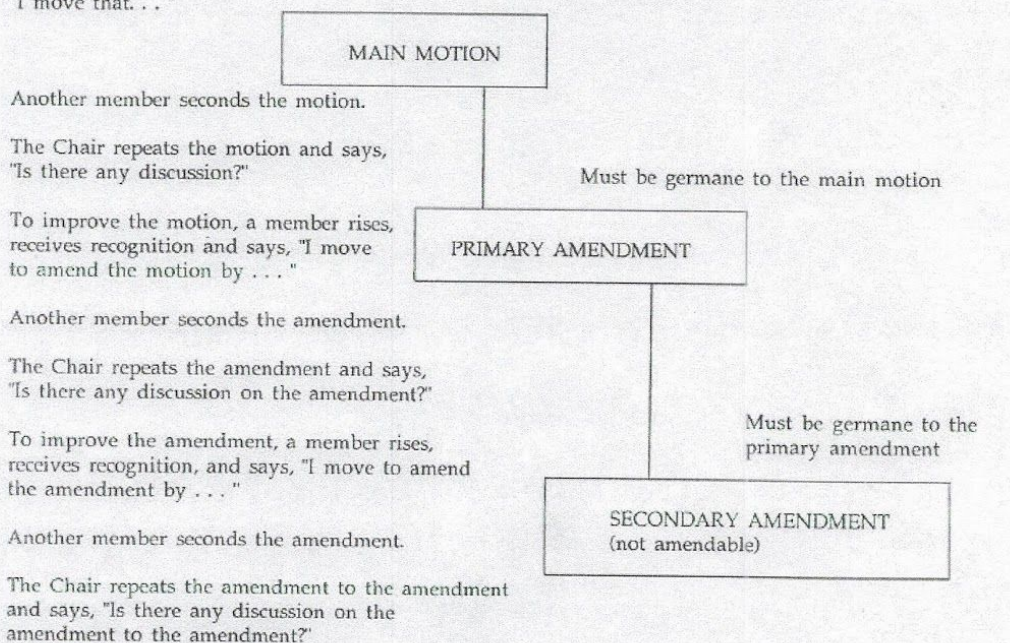
## AMENDMENTS ILLUSTRATED

Any main motion or resolution may be amended by:

1. Adding at the end
2. Striking out a word or words
3. Inserting a word or words
4. Striking out and inserting a word or words
5. Substitution

A member rises, addresses the chair, receives recognition, and states the motion:

"I move that . . ."



- When discussion ceases, the Chair says, "Those in favor of the amendment to the amendment say 'Aye.' Those opposed say 'No.'"
- If the vote was in the affirmative, the amendment is included in the primary amendment. The Chair then says, "Is there any discussion on the amended amendment?"
- If there is no discussion, a vote is taken on the amended amendment. If the vote in the affirmative, the amendment is included in the main motion. The chair then says, "Is there any discussion on the amended motion?"
- At this place, the motion can again be amended.
- If there is no further discussion, a vote is taken on the amended motion.
- Even though the amendments carried in the affirmative, the main motion as amended can be defeated.

**Appendix G: ICLEI ClearPath Software Invoice**



1536 Wynkoop Street #901  
 Denver, CO 80202  
 202-800-0301  
 kale.roberts@iclei.org  
 www.icleiusa.org

**Invoice**

**BILL TO**  
 Lewisburg, PA  
 55 South Fifth Street  
 Lewisburg, PA 17837

INVOICE #	DATE	TOTAL DUE	DUE DATE	ENCLOSED
1862	04/21/2020	\$600.00	04/30/2020	

**MEMBER PERIOD**  
 05/01/2020 - 04/30/2021

DESCRIPTION	ITEM	AMOUNT
Annual Membership dues for population 50,000 and under	<b>Dues - pop. under 50,000</b>	600.00

Choose your payment option above or send paper checks to: **BALANCE DUE** **\$600.00**  
 ICLEI - Local Governments for Sustainability, USA  
 1536 Wynkoop St. Suite 901 Denver, CO 80202

For questions, please contact Kale Roberts, Program Officer at kale.roberts@iclei.org or 845-464-3682. ICLEI Membership Services:  
 (toll-free) 1-855-504-8097 or iclei-usa@iclei.org  
 No refunds of membership fees shall be granted as a result of resignation



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**Invoice**

**BILL TO**  
 Bucknell University  
 ENST (Environmental Studies &  
 Sciences Department)  
 C/O Janel Kopp  
 One Dent Drive  
 Lewisburg, PA 17837

INVOICE #	DATE	TOTAL DUE	DUE DATE	ENCLOSED
1862	04/21/2020	\$0.00	04/30/2020	

**MEMBER PERIOD**  
 05/01/2020 - 04/30/2021

DESCRIPTION	ITEM	AMOUNT
Annual Membership dues for population 50,000 and under	Dues - pop. under 50,000	600.00
Choose your payment option above or send paper checks to:	PAYMENT	600.00
ICLEI - Local Governments for Sustainability, USA 1536 Wynkoop St. Suite 901 Denver, CO 80202	BALANCE DUE	<b>\$0.00</b>

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For questions, please contact Kale Roberts, Program Officer at [kale.roberts@iclei.org](mailto:kale.roberts@iclei.org) or 845-464-3682. ICLEI Membership Services:  
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 No refunds of membership fees shall be granted as a result of resignation



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