Appendix D

Green is Gold:

Encouraging Owner-Occupied Home Ownership and Healthy Student Rental Housing in Bowling Green's Downtown Residential Areas through Neighborhood Energy Efficiency Initiatives (NEEI) and Neighborhood Green Initiatives (NGI)

Some Issues and Opportunities:

Issues:

Concerns with degrading downtown residential areas - some older housing stock is not being maintained

Retain and increase owner-occupied housing and incentivize landlords to invest in their properties.

Encourage student renters to have a more positive, healthy engagement with their neighborhoods and a healthier sense of self-respect for themselves and their neighborhoods.

For the shorter and the longer term: a healthy, attractive, and vibrant downtown residential core will be much better for the City, the City's residents, downtown businesses, and for attracting investment to Bowling Green.

Some Issues and Opportunities

Opportunities:

Energy Costs. Energy costs are sky-rocketing—as are the costs of credit, food, medicine, education, travel, entertainment.

Smaller Can Be More Beautiful. Larger houses may soon not be very attractive—smaller houses that have less square footage and that are less expensive to purchase and heat/cool may become more attractive for first-time home buyers, families looking to economize, retirees, and young professionals.

"Walkability." With high gasoline and heating/cooling costs, there may be a better outlook for more modest houses located within walking distance of shops and "downtown destinations" or the University.

Low Energy and Low Housing Costs – A Real Economic Advantage Telecommuting from a modest-scale home as one's base may offer economic advantages for some – and low housing costs and low energy costs may be the ticket to greater economic freedom for many people in varying life situations. Electricity rates in BG relatively low.

BG Has Housing! Bowling Green's downtown core offers housing stock that is older and (quite often) more modestly scaled than newer housing, costs less to purchase, and is within walking distance to shops and the University.

Just Our Luck! We are a lucky community--in our local geography and our amenities!

Continuing the Good Work of Improving the Downtown

The City of Bowling Green had excellent foresight in improving the Downtown. Bowling Green's downtown is alive and tens of thousands of people visit it every year, during ordinary times as well as special times—such as festivals and parades.

The City of Bowling Green is justifiably proud of its accomplishments in making downtown Bowling Green an authentic place people want to visit with a sense of *history* as well as a sense of "*happening*"!

How do the City and its residents extend the good work of downtown improvement to the City's downtown core neighborhoods?

Can neighborhood energy efficiency initiatives (NEEI) and neighborhood green initiatives (NGI) be part of the answer?

What is a "Neighborhood Energy Efficiency Initiative" (NEEI)?

It is a joint activity by the local government and a neighborhood organization working with home owners to foster energy efficiency improvements in the neighborhood housing stock through demonstration projects.

Other stakeholders can also be involved—such as the contracting community, area churches, environmental organizations, financial institutions, and others.

The purpose of the demonstration project is to show the economics and performance of an energy efficiency improvement that can be used as a technique for downtown core housing stock to lower energy heating/cooling cost or electricity or water usage and improve the downtown housing stock—as well as the neighborhood.

Key Elements of an NEEI:

(a) A willing demonstration project "host" or "hosts" (generally, this will be homeowners but could also include contractors or developers).

(b) The neighborhood association and the City are "partners" to the NEEI project's concept—the NEEI must help the homeowner as well as show a way to improve the downtown housing stock through energy efficiency and green energy investments.

(c) Neighborhood organization works with the City and the host(s) to help locate funding and/or help the host(s) in raising funding for the demonstration project.

(d) The project's costs and economic performance (e.g. heating and cooling cost savings) are documented over a period of years.

(e) An inventory of NEEI projects and their descriptions are maintained on a web-site that can be accessed by others wanting to know about the project and how it performed in the downtown Bowling Green house or property and NW Ohio climate over a period of years.

(f) Existing housing assistance programs (such as the City's Rehabilitation Loan Program) remain as they are—but the NEEI project experience can be useful in showing homeowners what has been especially cost effective and beneficial when determining whether to apply for Rehabilitation Assistance for a specific EE improvement.

Some Example Types of Energy Projects that Would Fit the NEEI Model

Building Envelope Energy Efficiency Improvements

Green Energy production

Geothermal heating and cooling

Energy usage feedback systems

Installing highly efficient traditional heating and cooling systems

Passive solar applications (depending on site and building orientation)

Other energy conservation and alternative energy improvements

Landscaping to conserve energy and water usage

Installation of porous pavements to mitigate storm water drainage issues

Other storm water control measures (e.g. rain gardens)

Value of a NEEI Program for Encouraging Downtown Housing Stock Investment

Case Study Value. One important aspect of the NEEI is the accurate case study it provides to other BG downtown homeowners (or potential homeowners) who are weighing investment and/or home purchase decisions—as well as to City government.

"Local" is Real. The "local quality" of the NEEI project and its specific environmental and economic underpinnings are very important for obtaining an accurate case study.

Document! To be really useful to others as a case study, NEEI's need comprehensive documentation of the project, including local environmental conditions, capital and operating costs, financing method, maintenance issues, energy savings, and how the improvement actually contributed to the homeowner's property value, his or her family's quality of life (or the property's value as an income-producing property) and the neighborhood's quality of life.

Visit! The homeowner must be willing to freely share information with others and allow other interested property owners reasonable access to the property to visit it—such as by holding a property tour and open house once a year.

Expense—But Also Investment. NEEI's typically require some outlay of capital expense—but then they also give good information to others faced with the same or a similar investment decision.

Possible Funding Sources for NEEI's

Dedicated Revolving NEEI Loan Fund Revolving loan program (similar to existing Rehabilitation Loan offered by the City, but a separate demonstration project fund focused on downtown housing stock and NEEI's)

Private Contributions Private contributions to a NEEI revolving loan program

State and Federal Sources State or federal programs to encourage energy efficiency

Tax Credits Taxpayer-education concerning federal and state tax incentives, if and as available

Traditional Bank Financing with Interest Rate or Closing Cost Concessions Program education with local banks and credit unions, to encourage negotiated interest rate or closing cost concessions for home loans or home improvement loans that involve an NEEI project, given the home's lowered operating cost (the EE cost savings are economically extra income to the family), potentially higher resale value, strengthening of neighborhoods in which the bank lends, and the NEEI Project's ability to generate similar loans and additional business for the lending institution.

Billing Incentive from Municipal Utilities Municipal Utility rebate or discount for the home owner's installation of the NEEI's improvements, if the NEEI results in net energy production from the property (avoided cost sale to the utility) or significant energy savings from older housing stock (short-term energy bill rebate as an "incentive" to help fund initial installation cost).

Other Rebates Equipment manufacturer rebates in exchange for product or product application market development

Neighbors Helping Neighbors Donated labor (e.g. low or moderate income owners helped by neighbors or churches)

Other grass-roots efforts…All of the above!

What is a Neighborhood Green Initiative (NGI)?

A neighborhood association or group of neighbors working with other stakeholders (the University, City, area landlords, student renters) together determine to increase the quality of life in the neighborhood by one or more special green projects. NGI's may or may not require funding from other sources. Often, they can just be short term projects requiring only donated labor, environmental practices, or education. Some NGI's may lead to NEEI's.

Examples:

Neighborhood beautification of boulevard areas.

Sidewalk and street trash pick-up projects with other local groups or local churches (St. Marks has recently sponsored a sidewalk trash pick-up activity)

"Green covenant" – neighbors (such as student renters, landlords, and residents) agree to a green covenant in the neighborhood (e.g. to recycle, to clean up abandoned areas, to not engage in noise pollution, etc.)

Student "for credit" projects aimed at greening neighborhoods and creating more livable communities (e.g. planting trees, transforming abandoned lots or backyards into community gardens, etc.)

Planting and creation of neighborhood parks and play areas.

Conducting workshops on constructing rain gardens for surface water control.

Some Hoped-For Outcomes for NEEI's and NGI's

New Residents Greater awareness by City residents and those residents who are new to the City (e.g. in-coming University faculty and staff and other families new to BG) that the downtown residential areas are viable and interesting places to live that offer advantages.

Contractor Community Greater awareness by the contractor community of the advantages of developing and rehabilitating in the downtown—that there is a home owner market for these homes, as well as existing infrastructure which the developer does not need to install (e.g. sewer, water, storm water control, roads, and sidewalks all exist).

Community Valuing of Older Housing Stock Greater awareness of the advantages of older housing stock from a cost standpoint—both cost of purchase and heating/cooling cost (once EE improvements are made, and also due to the smaller area of many of these homes).

Emulation of NEEI projects Successful demonstration projects can help spur other homeowners (both downtown and in other parts of the City) to make EE improvements and to help value heating and cooling costs and EE investment in the family's overall housing cost calculation (e.g. as part of the purchase price, finance cost, and operational cost of the house).

Energy Efficiency as an Economic Stepping Stone A cost-effective "energy efficiency strategy" for a home can also mean an economic stepping stone, for some homeowners and renters. Following are 3 examples of how one energy efficiency improvement--geothermal energy—could be used as an economic stepping stone for owner or renter families.

Green Show-Casing/Green Culture The transition of the downtown residential areas into "Green-aware" areas of the City where energy and environmental practices can be easily show-cased. "Green Aware" can become part of the culture/way of life of BG's downtown residential areas—which also could help improve the quality of life generally in these areas.

Energy Efficiency Improvement as an Economic Stepping Stone

Energy efficiency improvements in downtown houses can be used to economic advantage for moderate income families and to attract home ownership in the downtown:

Mr. and Mrs. Jones – young couple starting out, 1 child

Currently renting small apartment at $500/month

Mom and Dad want a house for their child, with a backyard

As apartment dwellers, they are responsible for utility costs (gas and electricity) – the average is $100/month (winter months much higher)

Geo-thermally heated/cooled downtown BG 1350 sq. foot 3-bedroom home:

Heating and cooling cost averages $65/month versus $150/month for a similar sized house without geothermal (i.e. the geothermal is about 60% more efficient than traditional gas heat and electricity-based air condition for same size house)

Housing purchase cost in downtown area at around $120,000 (at least $15,000-$30,000 less than in more suburban, older areas of BG with similar square foot houses)

Additional EE improvements cost (including better insulation, energy efficient windows, geothermal system) roughly at $30,000

Total housing purchase cost: $155,000 – AND operational cost is much lower than a larger and more expensive house or one of similar size that is not EE improved!

Energy Efficiency Improvement as an Economic Stepping Stone

Energy efficiency improvements in downtown houses can be used to economic advantage for retirees and those on fixed incomes or those who have a need to be insulated from energy cost variability – and help **retain** current downtown owner-occupied homeownership:

Ms. Smith – age 65

Retired school teacher

Downtown home owner (long-time) and likes convenience of downtown – she wants to "age in place" and continue to be a vital member of her community

Wishes to insulate herself from natural gas price increases – currently heats older home with natural gas

EE improvements can reduce her need for natural gas and electricity – thus moderating her exposure to price increases and making it easier to stay in her home.

Geothermal system would completely eliminate her natural gas space heating and hot water heating bill (and the price variability of natural gas) and deliver efficiencies over her current traditional air conditioning cooling system

Energy Efficiency Improvement as an Economic Stepping Stone

Energy efficiency improvements in downtown houses can be used to economic advantage to help raise the standard of living of renters and to help create a path to homeownership for renters.

Ms. Brown – single mom, 1 child

Currently renting 2-bedroom apartment in older house - $550/month

Responsible for natural gas and electricity cost – average $120/month (winter months much higher)

Ms. Green – Landlord, bought or improved home with energy efficiency improvements, including geo-thermal heating: able to rent the home to families in a highly competitive market, because of the much lower cost to heat/cool (and no natural gas heating bill!)

Ms. Brown can save money by living at Ms. Green's rental property – at $750/year to heat/cool a 1350 sq. ft. home (versus $1800/year for the same sized property that is not EE improved and does not have geo-thermal) or her current $120/month, Ms. Brown has an incentive to continue living at Ms. Green's and an increased incentive to take care of the property, since she enjoys an economic advantage by living there – she can be a long-term, stable renter.

If Ms. Green wants to eventually exit the rental business: she can sell Ms. Brown the home by way of an installment contract, since Ms. Brown is a long-term, stable renter.

Three Misconceptions About Geo-Thermal Systems

Misconception #1: "They need a lot of space to install – I need a huge backyard"

Geo-thermal systems can now be installed in small urban lots – instead of horizontal piping, vertical wells are dug

Misconception #2: "Rock is a problem."

Rock actually is an easier drilling condition than dirt because the resistance of the rock makes it easier to drill.

Misconception #3: Geothermal heating and cooling systems require hot springs or other geological sources of intense heat.

Geo-thermal heating and cooling systems utilize the thermal energy that is naturally present in the ground everywhere and do not require hot springs or other geological sources of intense heat.

Needed Conditions for Urban Lot Installation of Geothermal Heating/Cooling Systems (Using Vertical Wells)

Utilities Siting. Other utilities (water, sewer, electricity) must run to the front of property, so that the backyard can be used for geothermal wells.

Drilling Equipment Access. There must be enough overhead space and enough lot space to be able to bring in a well-drilling rig, without blocking service alleys or street traffic.

Depth of Wells. The geo-thermal vertical well itself is about 300 feet deep; the pipe for the circulating fluid is about ¾ inch wide.