Good Stewards/Good Neighbors

Responsible Care for Our Church Building & Assets
Joyful Care for Our Neighbors in Need
Both Through Energy Efficiency

A Proposal of Vision and Commitment
For West End United Methodist Church

Proposal By

Josh Richardson, Brugmansia Ministries

And

Stacey Harwell-Dye, Jim Raver, Crys Zinkiewicz, and Matthew Phelps

West End United Methodist Church, Nashville TN

BRUGMANSIA MINISTRIES

5/19/21

Proposal Summary

We are proposing that WEUMC invest in building efficiency and behavior changes with respect to energy usage, and that any income saved through those measures over the next 30 years will be evenly distributed between the Creation Care Committee/Buildings and Grounds for additional funds to improve the energy efficiency/infrastructure of the building and to Missions and Outreach for direct aid to WEUMC's neighbors in need.

The West End United Methodist Church (WEUMC) building is currently not fully optimized for energy efficiency, is not being used in a way that minimizes energy consumption, and has an HVAC infrastructure that could be further upgraded for efficiency.

Optimizing and upgrading existing energy infrastructure and adjusting how the building is being used has the potential to

- Increase the overall efficiency of the building,
- Create a more thermally stable sanctuary, which will help preserve WEUMC's historic organ and concert piano,
- Make the worship and workspaces more comfortable,
- Reduce the environmental and carbon footprints of WEUMC,
- Decrease the overhead of WEUMC,
- Prepare the church for the impacts of climate change,

and

- Provide a consistent source of additional funds for the church's ministries to God's people in need.

A Proposal of Vision and Commitment

The following proposal differs from a traditional proposal, as the authors are not requesting any funds, nor are they necessarily proposing discrete actions on a set timeline. Instead, the authors are asking that WEUMC establish a framework to incentivize energy efficiency measures within the WEUMC church building, commit to becoming a more energy efficient congregation, and invest in WEUMC's direct-aid ministry. Acceptance of this proposal is accepting the framework proposed and not the possible actions listed within. Those potential actions, if additional funds are needed outside of funds that could be attained through grants and donations by Buildings and Grounds, Missions and Outreach, or the Creation Care Committee, would require additional proposals with more details and specifics to be approved by the WEUMC Board of Trustees. At the same time, the authors are asking WEUMC to immediately authorize Buildings and Grounds staff, in conjunction with Missions and Outreach staff and members of the Creation Care Committee to enact energy-saving measures, like making sure lights are off in unused areas of WEUMC during the daytime, for WEUMC that do not require financial investments on behalf of WEUMC.

Our Wesleyan Tradition and WEUMC Current Building Usage

The First Simple Rule of Methodism: Do No Harm

In 1739, John Wesley detailed three simple rules to govern how individuals should interact in the world. Those have been adopted into The United Methodist Church's Book of Discipline (UMCBOD). The first of these rules is to "do no harm, by avoiding evil of every kind."[1] In today's world, where humans understand the interconnectedness between energy usage, economic prosperity, environmental degradation, climate change, and environmental injustice, "doing no harm" includes minimizing our usage of electricity and fossil fuels while reducing undue damage to existing properties.

Currently, the WEUMC electrical and HVAC systems are not as efficient as technologically possible and are inadequately regulating temperatures in the WEUMC sanctuary, causing unnecessary and potentially costly damage to WEUMC's pipe organ and pianos. Additionally, WEUMC is not consistently using its building in a way that minimizes electrical consumption by keeping appliances and lights running when not in use or necessary.

For WEUMC to "do no harm," the church needs to do everything within its power to reduce its ecological/carbon footprint and to make sure that its existing properties are maintained to the best of WEUMC's ability. Moreover, WEUMC is not always performing routine measures to reduce energy consumption, like always keeping lights off when spaces are not in use or powering down/putting computers to sleep when they are not in use. In these cases, WEUMC is unduly using electricity that is directly contributing to the harm of its neighbors through economic suppression tied to living in an ecologically degraded area and physical harm caused by the same ecologically degraded area created through energy production.[2]

The Harm Inherent in Energy Production/Consumption

Energy production/consumption can be directly linked to numerous adverse impacts for human and nonhuman life. Additionally, the physical and economic costs associated with energy production are not evenly distributed between geographies, class, or racial demographics. In general, within the United States non-dominant groups (poorer, disabled, female, rural, non-white, LGBTQIA+, indigenous, incarcerated, unhoused, etc.) bear the largest burden of environmental degradation associated with energy production with challenges ranging from

---

[1] "The General Rules of the Methodist Church | The United Methodist Church," accessed May 14, 2021, https://www.umc.org/en/content/the-general-rules-of-the-methodist-church.

[2] Ryan Holifield, "DEFINING ENVIRONMENTAL JUSTICE AND ENVIRONMENTAL RACISM," *Urban Geography* 22, no. 1 (2001): 78–90, https://doi.org/10.2747/0272-3638.22.1.78; Michael Hendryx et al., "A Geographical Information System-Based Analysis of Cancer A Geographical Information System-Based Analysis of Cancer Mortality and Population Exposure to Coal Mining Activities in Mortality and Population Exposure to Coal Mining Activities in Digital Com," accessed May 14, 2021, https://researchrepository.wvu.edu/faculty_publications; Rob Nixon, *Slow Violence and the Environmentalism of the Poor*, *2013* (Cambridge: Harvard University Press, 2013), 17-22.

increased cancer and asthma rates, lower property values, impacted neurological development in children, and decreased life expectancies.[3] Outside of the acute harms to individual communities through energy production, the carbon emissions associated with energy production are driving geologic-scale changes to earth systems that disproportionately impact these same marginalized communities in the US and globally. [4]

For WEUMC to live into its calling to love everyone and to fulfill its responsibility as a United Methodist institution to not harm others, the church has a moral and theological responsibility minimize its energy usage to the greatest extent possible, as the energy consumed by WEUMC is directly harming our neighbors. Overusing energy, either through poor energy policies or through building inefficiency, is foundationally incompatible with the vision of our own church and The United Methodist Church as a denomination.

The Harm to WEUMC Assets in Poor Climate Control

WEUMC has various assets in its possession whose longevity and function are dependent upon stable temperatures and well-regulated humidity, specifically, the musical instruments used within the sanctuary and other areas. The organ and pianos are most impacted by poor temperature and humidity regulation. The current HVAC system at WEUMC is unable to properly regulate temperatures for instrument preservation. The continued damage could lead to reduced playability in the future (personal communication: organ repair company).

The harm caused from continued degradation of the organ (and pianos) from poor temperature regulation will ultimately cost WEUMC substantial funds in organ repair and increased funds for piano tuning and could lead to the eventual degradation of these instruments to the point where they are no longer playable. WEUMC, as steward of these valuable assets, needs to do everything within its control to properly care for its instruments, including the historic organ. This means that WEUMC must address the issues with its HVAC system to make sure that the instruments are housed in a properly climate-controlled environment to maximize their lifespan.

WEUMC Energy Consumption and Building Use Analysis

WEUMC January 2021 One-Month Energy Snapshot

In the month of January 2021, WEUMC consumed 49,280 kWh of electrical energy and 6.89×10^8 BTU of heat energy in the form of natural gas, costing WEUMC $8,172.81. Based on a 2019 evaluation of Tennessee Valley Authority (TVA) energy sources, 14% and 27% of electrical generation to Nashville are from fossil fuels in the form of coal and natural gas,

---

[3] Nick Watts et al., "The 2019 Report of The Lancet Countdown on Health and Climate Change: Ensuring That the Health of a Child Born Today Is Not Defined by a Changing Climate," *www.Thelancet.Com* 394 (2019), https://doi.org/10.1016/S0140-6736(19)32596-6; Anna J. Willow, "The New Politics of Environmental Degradation: Un/Expected Landscapes of Disempowerment and Vulnerability," *Journal of Political Ecology* 21, no. 1 (December 1, 2014): 237–57, https://doi.org/10.2458/v21i1.21135.

[4] United Nations Department of Economic and Social Affairs, *Climate Change Resilience: An Opportunity for Reducing Inequalities*, 2016.

respectively.[5] Using the 2020 estimates for TVA energy production, WEUMC produced 42 tonnes (1 tonne = 1 metric ton of Carbon Dioxide (CO_2)) in January with 10 tonnes coming from electrical production and 32 tonnes from natural gas consumption. For reference, the 42 tonnes of CO_2 produced by WEUMC for the month of January 2021 equals the amount of carbon sequestered by 51.5 acres of US forests in one year.[6]

Energy Consumption Prior to Covid (April 2019 to March 2020)

To compare WEUMC's energy consumption outside of the COVID pandemic, which is assumed to not represent a normal heating/cooling situation, WEUMC's energy consumption was evaluated for the year prior to the COVID pandemic. In the pre-COVID year, WEUMC consumed 1,009,868 kWh of electrical energy and approximately $2.4x10^9$ BTU heat energy in the form of natural gas, costing WEUMC $97,095.20 and $23,777.17, respectively. Out of the $97,095.20 charged to WEUMC for energy consumption, $32,683.62 was for peak demand electrical consumption (2163.2 kW). The 1,009,868 kWh of electrical energy and $.4x10^9$ BTU of heat energy consumed by WEUMC from April 2019 to March 2020 represents an equivalent average electrical energy consumed by 95 houses and 58 houses worth of heat energy.[7]

Table 1: WEUMC Electricity/Gas Summary 4/2019 to 3/2020

WEUMC Electricity/Gas Summary April 2019 - March 2020							
Month	Electricity (kWh)	Natural Gas (10^7 BTU)	Electricity Charge ($USD)	Electricity Demand ($ USD)	Natural Gas ($USD)	Total Cost ($ USD)	Total CO2 (Tonnes)
Apr-19	51068	24.9	3290.58	1602.2	2547.48	7884.57	28.40
May-19	87200	1.24	5075.65	2858.78	346.39	8725.13	26.62
Jun-19	116000	1.34	6718.6	3615.02	341.91	11119.84	35.25
Jul-19	120320	1.27	7073.58	4066.26	336.51	11924.09	36.50
Aug-19	130400	1.15	7361.1	3873.31	327.26	12009.41	39.44
Sep-19	127440	1.32	6498.86	4038.25	340.37	11325.22	38.65
Oct-19	105440	1.18	5857.87	3483.34	340.95	10129.90	32.02
Nov-19	61600	12.6	3843.68	2663.42	1259.1	8213.94	25.03
Dec-19	55840	48.4	3364.86	1603.74	4317.24	9733.58	42.28
Jan-20	49280	47.0	3276.04	1609.66	4818.78	10152.22	39.62
Feb-20	54560	51.8	3443.53	1627.42	5283.68	10802.37	43.70
Mar-20	50720	45.2	3244.64	1642.22	3517.5	8852.10	39.07
Total	**1009868**	**237**	**59048.99**	**32683.62**	**23777.17**	**120872.40**	**426.60**

[5] Tennessee Valley Authority, "Our Power System," accessed May 14, 2021, https://www.tva.com/energy/our-power-system.
[6] United States Environmental Protection Agency, "Greenhouse Gas Equivalencies Calculator," accessed May 14, 2021, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.
[7] United States Environmental Protection Agency.

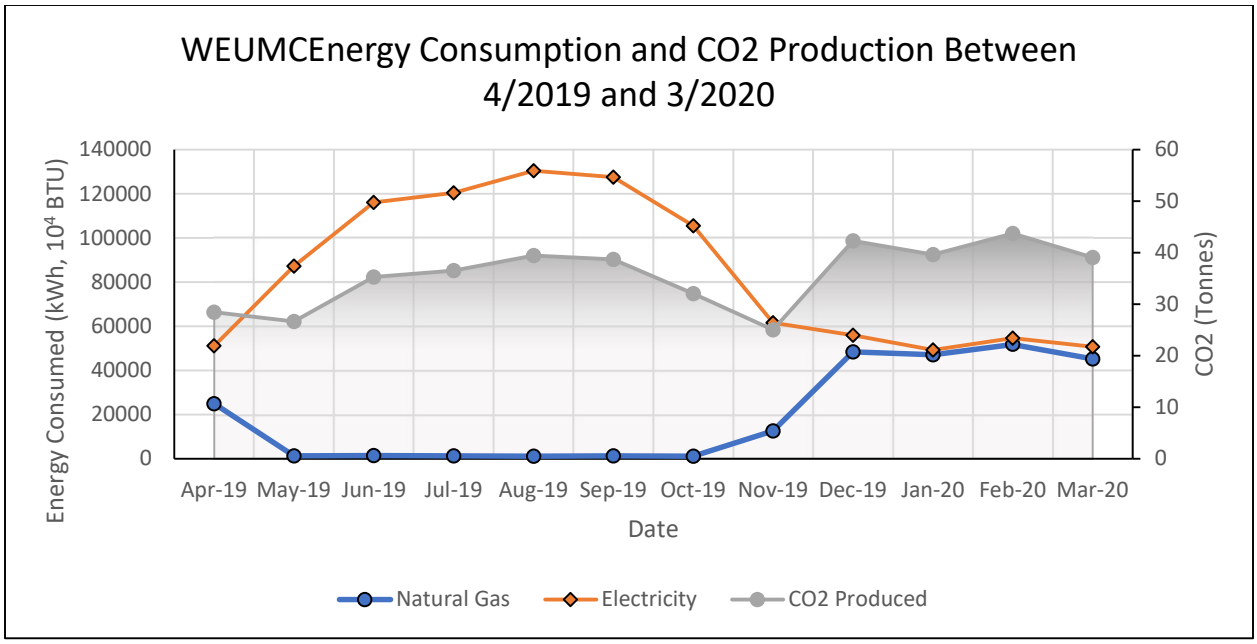

Figure 1: WEUMC Energy Consumption and CO_2 Production Between 4/2019 and 3/2020

As shown in Table 1 and Figure 1, there is a loosely inverse relationship between the amount of electricity consumed and the amount of natural gas consumed by WEUMC, with a base electrical load of around 50,000 kWh/month. The inverse relationship between electrical consumption and natural gas consumption is directly related to the WEUMC HVAC system, which uses natural gas when in heating mode (from April to November in the target year) and electrical energy for cooling (May through October). Because of TVA's energy profile, WEUMC produced fewer carbon emissions in the summer when in cooling mode, even though electrical generation was higher.

WEUMC Energy Consumption Comparison to Other Churches: Pre-COVID (April 2019–March 2020)

In the United States, on average, congregations use 4.5 kWh and 41,500 BTU for each ft^2 of their building.[8] To accommodate for the COVID pandemic's influences on energy consumption, the energy consumption data was taken from April 2019 through March 2020. WEUMC's building is approximately 123,000 ft^2 which means that WEUMC is consuming 1.8 times the average electrical load/ft^2 and 0.4 times the average gas load/ft^2 for a congregation in the United States. While WEUMC has a large sanctuary, a gymnasium, and a theater, which all contribute to a higher energy load, the energy calculations suggest that the WEUMC building is not as efficient as possible and is consuming more energy than is necessary for a building with similar functions.

[8] "Energy Information Administration (EIA)- Commercial Buildings Energy Consumption Survey (CBECS) Data," accessed May 14, 2021, https://www.eia.gov/consumption/commercial/data/2012/; "Business Energy Advisor | Congregational Buildings," accessed May 14, 2021, https://esource.bizenergyadvisor.com/article/congregational-buildings.

Energy Consumption Over 1 year (April 2020–March 2021): COVID-Impacted

For the most recently available yearly data (April 2020–March 2021; Table 2 and Figure 2) WEUMC consumed approximately 819,120 kWh of electrical energy and approximately $2.4x10^9$ BTU heat energy in the form of natural gas, costing WEUMC $78,777.95 and $20,287.76 respectively. The 819,120 kWh and $2.4x10^9$ BTU represent an equivalent average annual electrical consumption for 77 US houses and an average annual gas consumption of 58 US houses.[9] Considering the electrical generation profile of TVA, WEUMC produced approximately 244 tons of CO_2 from electrical generation and 126 tonnes of CO_2 from natural gas consumption from April 2020 to March 2021. The 370 tonnes of carbon produced by WEUMC is equivalent to the amount of carbon sequestered by 453 acres of existing US forests in a year, or the size of 347 football fields worth of US forests.[10]

To offset the amount of carbon produced by WEUMC takes the equivalent of 347 football fields of forests every year.

Table 2: WEUMC Electricity/Gas Summary 4/2020 to 3/2021

WEUMC Electricity/Gas Summary: April 2020 – March 2021							
Month	Electricity (kWh)	Natural Gas (10^7 BTU)	Electricity Charge ($USD)	Electricity Demand ($ USD)	Natural Gas ($USD)	Total Cost ($ USD)	Total CO2 (Tonnes)
Apr-20	40640	7.74			771.93	4968.04	16.20
May-20	36480	1.20			297.77	3898.3	11.49
Jun-20	78400	1.34	4525.23	3057.97	311.63	8362.05	24.06
Jul-20	112320	1.37	6241.09	3506.1	304.65	10516.99	34.17
Aug-20	127200	1.38	6861.05	3661.7	305.23	11293.17	38.61
Sep-20	114080	1.34	6063.25	3608.79	302.91	10418.12	34.68
Oct-20	78240	1.47			311.75	8067.55	24.08
Nov-20	59680	1.58	3557.34	2556.86	339.49	6899.15	18.61
Dec-20	43680	29.5	2782.99	1085.74	2158.59	6586.47	28.66
Jan-21	49280	68.9	3098.19	1020.62	5391.79	10252	51.20
Feb-21	33840	60.8	2795.46	1070.94	4581.86	9158.87	42.33
Mar-21	45280	61.9	2884.09	1047.26	4037.09	8645	46.32
Total	**819120**	**239**	**38808.69**	**20615.98**	**19114.69**	**99065.71**	**370.43**

[9] "Frequently Asked Questions (FAQs) - U.S. Energy Information Administration (EIA)," accessed May 14, 2021, https://www.eia.gov/tools/faqs/faq.php?id=97&t=3.

[10] United States Environmental Protection Agency, "Greenhouse Gas Equivalencies Calculator."

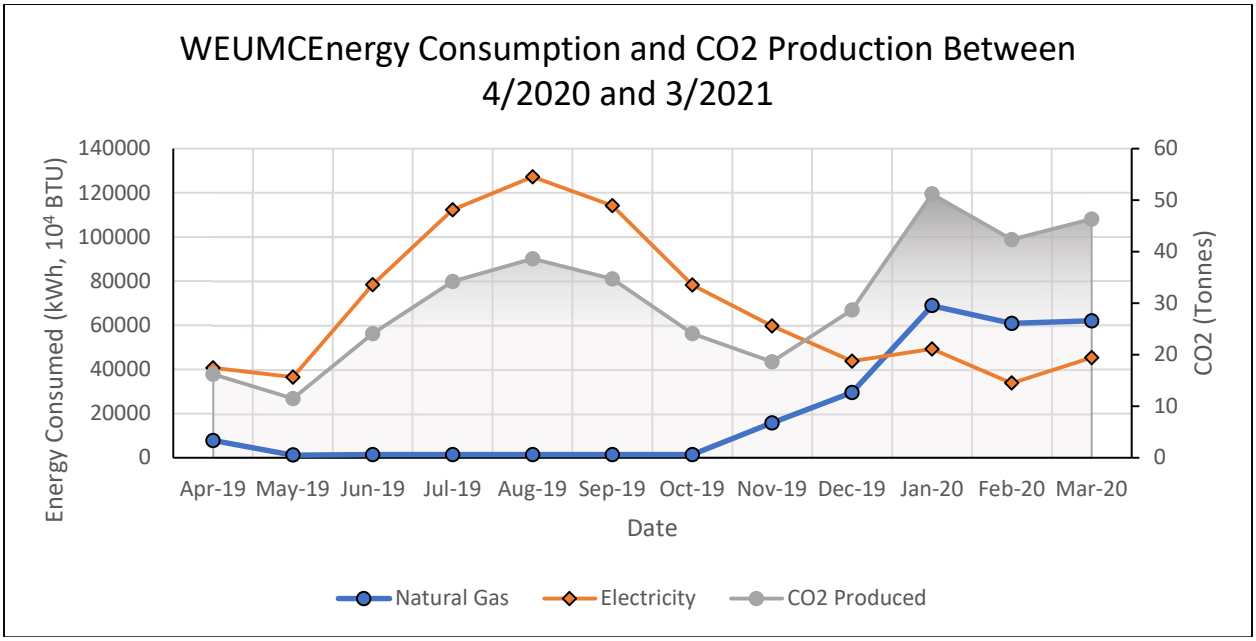

Figure 2: WEUMC Energy Consumption and CO_2 Production Between 4/2020 and 3/2021

Table 2 and Figure 2 highlight similar trends in energy and gas usage from the pre-COVID period and the COVID-impacted period. In general, there is a lower baseline electrical energy usage in the COVID-impacted period (around 40,000 kWh compared to 50,000). Also, there appears to be a delay in the shift to electrical cooling, which suggests measures were taken with respect to HVAC usage to reduce energy consumption while the building was not in use.

COVID-19 Caveat to Consumption Comparison

The COVID-19 pandemic provided WEUMC a unique opportunity to see how its building was operating with a reduced usage, where the building was largely underused and uninhabited, except for the preschool on the first floor and intermittent staff usage on the second, third, and fourth floors. For most of that calculation period, church services were held online, small groups did not meet at the church, and access to the building was restricted to outside groups like Room in the Inn and 12 Step programs. In general, it is broadly estimated that an unoccupied space of an efficiently used building consumes roughly 60% of the energy load of an occupied space.[11] Comparing the non-COVID impacted year of 2019–2020 with the COVID year of 2020–2021, WEUMC consumed 81% of the electricity in the non-COVID period and 101% of the natural gas in the COVID period compared to the non-COVID interval. Additionally, baseline electrical demand dropped from around 50,000 kWh/month to around 40,000 kWh/month suggesting that there are opportunities to further decrease electrical usage (Figure 3).

[11] "COVID Shows That Even Empty Buildings Must Use Energy | Carbon Lighthouse," accessed May 14, 2021, https://www.carbonlighthouse.com/covid-building-occupancy-energy-use/.

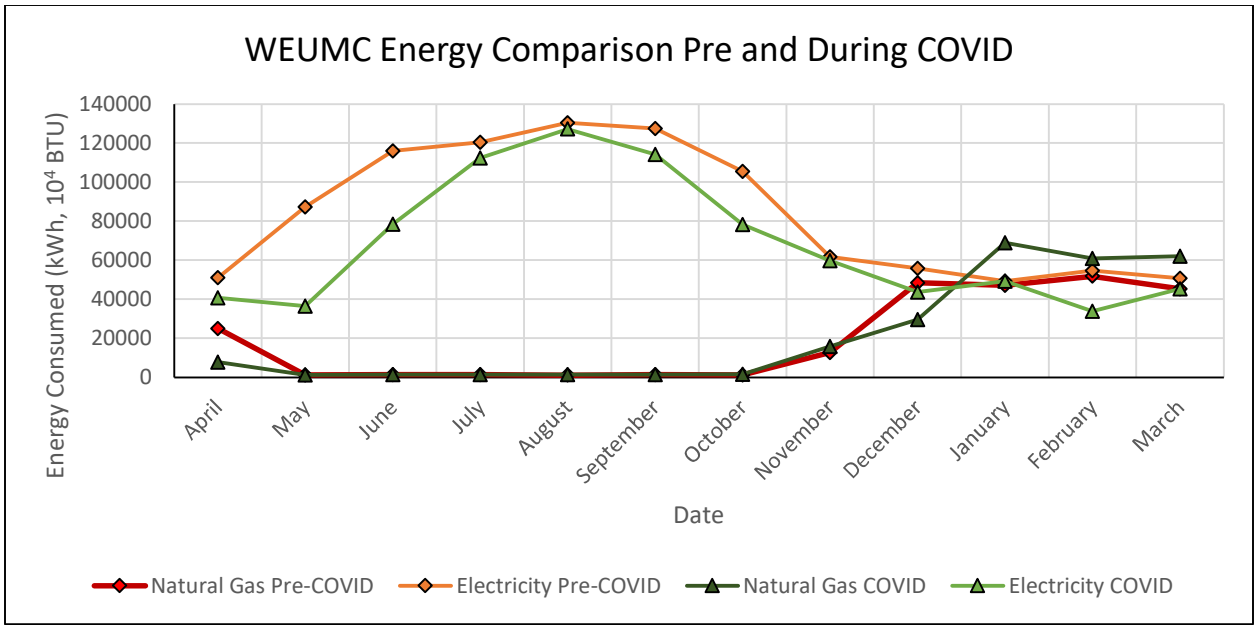

Figure 3: WEUMC Comparison Energy Consumption During and Prior to COVID pandemic

Figure 3 shows that WEUMC's consumption patterns between pre-COVID and COVID periods were similar, which reflects similar seasonal demands on electrical production and heating needs. The curves show large differences in months when WEUMC was transitioning from heating to cooling and vice versa. These discrepancies are possibly due to choices by the WEUMC building engineer to conserve energy by delaying climate controlling to the WEUMC building while it was mostly unoccupied. In contrast, months, like July, August, and September, when the building would be fully climate controlled both during COVID and prior to COVID have similar energy demands, suggesting that building occupancy and usage are not driving large changes in energy consumption.

> Both during COVID and prior to COVID, WEUMC's energy demands were similar for months the HVAC was fully in use, suggesting that the building occupancy is not completely driving energy consumption and there definitely is room to improve.

As a note, electrical demands and gas demands are partially driven by outside temperatures which fluctuate from year to year. But, overall, the relative similarity in consumption between COVID and non-COVID occupancy, especially in months when the HVAC is either fully in heating or cooling mode, suggests that the WEUMC building energy consumption is not as efficient as possible.

Office Layout, Building Usage, Telecommuting Post-COVID

Throughout the COVID-19 Pandemic, the basement, the gymnasium, and the second, third, and fourth floors of the WEUMC building have remained predominantly unoccupied or sparsely occupied by staff who have been forced to telecommute for parts of the pandemic. Over that same period, due to the existing infrastructure of WEUMC's building and large heating zones,

there are large areas of the building that have not been heavily used and have continued to be climate controlled. This has led to significant portions of the WEUMC building using excess energy when they are unoccupied, in a manner that is inconsistent with efficient building usage or good stewardship of natural resources.

While the building use habits of staff at WEUMC are somewhat unknown after the building fully reopens, if WEUMC staff follow projected workforce trends in future telecommuting then WEUMC will continue to inefficiently climate control the WEUMC building, without adjustments to office locations and electrical/HVAC infrastructure.

WEUMC Preparing for the Future

The Second Simple Rule of Methodism: Do Good

John Wesley's second simple rule, following "do no harm, by avoiding evil of every kind," is to "[do good]; by being in every kind merciful after their power; as they have opportunity, doing good of every possible sort, and, as far as possible."[12] Wesley's directive for doing good of every sort and as far as possible extends beyond the reduction of harm and calls Methodists to seek out innovative ways to be a positive force both in the church and in the world. For WEUMC, with respect to resource stewardship, energy efficiency, and building use, this means that WEUMC needs to maximize the overall value and use of its financial resources, building space, and energy consumed.

Current Funding Paradigm for Direct-Aid at WEUMC

Currently, WEUMC provides roughly $12,000/year, or 0.5% of its 2021 operating budget of $2,512,726, for direct-aid to its neighbors in need (personal communication: Rev. Harwell-Dye). Additional funding for direct aid is collected in the form of offerings and individual contributions from congregants and staff. Since WEUMC began detailed tracking of its direct-aid during the COVID-19 pandemic, WEUMC typically exhausts its monthly direct-aid budget within the first two weeks of the month and sometimes within the first week of the month, while aid requests are typically 4–5 times the allotted budget for the month. And, because of a housing crisis in Nashville where unhoused individuals may wait up to 1.5 years for subsidized low-income housing, WEUMC will continue to see increased need within the Nashville community (personal communication: Susan Adcock, Open Table Nashville).

Building a Virtuous Cycle: Using Energy Efficiency to Fund Direct-Aid to Our Neighbors

By investing in energy efficiency in the WEUMC building and reducing unnecessary electrical usage, which WEUMC already needs to do to reduce its harm and to be in alignment with the principles of the UMC and the Book of Discipline, WEUMC will be reducing the day-to-day operating budget of WEUMC, potentially providing a budget surplus. Because of the potentially

[12] "The General Rules of the Methodist Church | The United Methodist Church."

substantial budget surplus created through energy efficiency programs at WEUMC, WEUMC has the unique opportunity to use this budget surplus to greatly increase the funding to our neighbors in need and to provide additional funding for energy efficiency programs, without increasing the overall operating budget of WEUMC. Additionally, by designating recurring funds for direct outreach through energy programs, WEUMC is incentivizing its congregation to invest in the WEUMC building because congregants are assured that the returns on their investments will go toward helping those in need in a concrete and tangible way.

> To be able to be both good stewards and good neighbors is a worthy investment.

For these reasons, the authors of this proposal are proposing that WEUMC create a fund to be equally distributed to Missions and Outreach to increase WEUMC's direct-aid budget and to Buildings and Grounds/Creation Care to fund additional energy efficiency programs. Monies for this fund would be allocated from identified budget surplus' created through energy efficiency measures through the year 2051, using the energy baseline of 2019–2020 as a baseline reference.

Proposal in Practice Using FY 2021 Budget

For FY 2021, WEUMC has budgeted a total of $143,500 combined for electrical and gas utilities with an additional $35,000 for HVAC maintenance. Assuming that WEUMC will use its entire utilities budget and a uniform electricity/gas rate, a 30% reduction in utility usage, which is within a reasonable expected range, would result in a savings of $43,050. Within the current proposal structure, the $43,050 saved in energy consumption would be evenly divided with Missions and Outreach receiving $21,525 for direct-aid and Creation Care/Buildings and Grounds receiving $21,525 to reinvest into building efficiency. These funds would more than double the amount WEUMC provides in direct assistance and would be a substantial investment into the health and longevity of the WEUMC building. At the same time, depending on the efficiency/HVAC choices made, WEUMC will also prolong the health of the pianos and historic organ.

Concrete Steps to Energy Efficiency and Thermal Stability

WEUMC has already invested in some energy saving technologies, but there are a number of areas where WEUMC could greatly increase its efficiency. The below list is not exhaustive but provides a few concrete examples of ways WEUMC could increase its efficiency and help preserve its assets.

Short Term/Low Cost (0-1 years)

- Evaluate building usage and demands to see if changes can be made to current heating/cooling patterns
- Keep lights off in Bishop's Parlor, Scales Chapel, Wilkerson Chapel, Library, Reed Hall, and Sanctuary unless occupied or in use
- Set all desktop computers, printers, and other electronic devices to either turn off or go into power saving modes at night automatically.

- Identify particular items and zones within the building that need to be precisely climate controlled (like archival materials and instruments) and consolidate those items to allow for targeted heating/cooling of the building
- Keep televisions and computer screens off unless they are being used
- Provide additional weatherization to doors and windows, where possible
- Place signage to ask congregants and patrons to turn lights out when they are finished in a space
- Unplug devices that are not in use but are drawing power (paper shredders, televisions, power strips, computer speakers, etc.)

Medium Term/Medium Cost (1-5 years)

- Upgrade all lights to LEDs
- Investigate thermal blinds for windows in classrooms and sanctuary (where applicable)
- Investigate the potential installation of additional thermostats and smart thermostats to minimize unnecessary heating/cooling when space is not being used
- Investigate the possibility of installing HVAC dampers to better control the existing HVAC setup
- Where possible, switch permanent staff from desktop to laptop computers
- Investigate potential of additional motion sensor lights being installed

Long Term/High Cost (5-10 years)

- Update HVAC system to geothermal heat pumps to increase energy efficiency
- Investigate potential of solar installation with battery backups to reduce NES demand charges and for natural disaster resilience.
- Install auxiliary heating/cooling infrastructure specifically to regulate the temperatures for the organ

Additional Benefits: Becoming a "City on the Hill"

In the Beatitudes, Jesus calls his disciples to be like a city on the hill that is widely visible (Matthew 5:14). Historically, WEUMC has seen itself as a pillar of the UMC within the Tennessee Conference and beyond. By adopting and promoting a unique funding model that simultaneously supports social justice, mitigates WEUMC's harm in climate change, and maintains WEUMC's historic building and legacy, WEUMC can continue to be a model to the UMC around how churches can fund innovative missional ideas while continuing to serve its existing congregation within its existing building. In doing so, WEUMC would continue to live into its mission of loving God with its head, heart, and hands while investing in the long-term health and stability of the WEUMC and Nashville communities.

Additional Benefits: Preparing for Climate Change

The impacts of climate change on local infrastructures are projected to be significant and potentially dire in this century. Already, in this past year (2021), climate change deeply impacted the energy infrastructure of Texas leaving millions of individuals without power and access to

clean water, while causing incredible economic hardships on individuals across the country in the form of high utility bills. While the situation that occurred in Texas is exceptional for 2021 and situational to Texas, these kinds of infrastructural challenges and accompanying economic hardships are expected to become more pervasive and regular across the country.[13] It is projected that the Southeast region of the US will be particularly impacted by infrastructural/economic challenges associated with utility costs and distribution. Specifically, individuals in the Southeast could see up to a 25% increase in utility cost above inflation from climate change alone by 2090, which would be roughly an additional $30,000/year equivalent for WEUMC, based on utility consumption for 2019–2020.[14]

At the same time, proactively preparing for the impacts of climate change through energy efficiency and adaptation strategies enacted by WEUMC's Creation Care Committee and Buildings and Grounds could reduce the negative impacts experienced by WEUMC from climate change by upwards of 50% in the same time period.[15] From both an economic and environmental standpoint, the sooner WEUMC begins investing in its building the more likely it will be that WEUMC will be able to withstand the impacts of climate change and continue to be financially stable into the future.

Conclusions Drawn

WEUMC's church building is not currently as energy efficient as possible, thermally well-regulated, or prepared to manage the challenges of climate change. This is costing WEUMC excessive amounts of money, damaging invaluable instruments including the historic organ and concert piano, unnecessarily consuming electricity and fossil fuels, and leaving WEUMC vulnerable to the physical and economic challenges of climate change. To fully align itself with the principles of the UMC, WEUMC has a fiduciary, ethical, and theological responsibility to invest in making its building as energy efficient as possible and making sure that it is not inadvertently damaging its assets through neglect or unduly causing harm to its neighbors through environmental degradation created in resource consumption.

At the same time, by designating funds to support additional energy efficiency programs and missional outreach (split 50-50), created through savings on utility bills from energy efficiency measures, WEUMC has the opportunity to create a passive-revenue structure that ensures continued funding for energy-efficiency programs and aid to our community, while helping WEUMC maintain its historic organ and pianos. By taking these steps, WEUMC can create a model for the UMC around how churches can responsibly invest in the longevity of their

---

[13] US EPA and Climate Change Division, "What Climate Change Means for Texas," accessed May 14, 2021, www.epa.gov/climatechange.; "Polar Vortex Responsible for Texas Deep Freeze, Warm Arctic Temperatures | | UN News," accessed May 14, 2021, https://news.un.org/en/story/2021/03/1086752; "IPCC Report Global Warming of 1.5 C: Summary for Policymakers" (Switzerland, 2018); P. R. Ehrlich and A. H. Ehrlich, "Can a Collapse of Global Civilization Be Avoided?," *Proceedings of the Royal Society B: Biological Sciences* 280, no. 1754 (March 7, 2013): 20122845–20122845, https://doi.org/10.1098/rspb.2012.2845.

[14] Charles Fant et al., "Climate Change Impacts and Costs to U.S. Electricity Transmission and Distribution Infrastructure," *Energy* 195 (March 15, 2020): 116899, https://doi.org/10.1016/j.energy.2020.116899.

[15] Fant et al.

building while providing tangible positive outcomes for their community, fulfilling its mission to love God with its hands, minds, and heart.

Next Steps

At this point, we are seeking approval in principle. Beyond the Creation Care Committee, several other key groups in the church need also to give their blessing to move forward. Those include Buildings and Grounds Committee, the Ministry Table, and Trustees. With their endorsement of the goals, then a dedicated committee can further investigate the feasibility of specific measures to address the various opportunities for improved efficiency and create a doable sequence and timeline to bring the benefits cited in this proposal to fruition.

Works Cited

"Business Energy Advisor | Congregational Buildings." Accessed May 14, 2021. https://esource.bizenergyadvisor.com/article/congregational-buildings.

"COVID Shows That Even Empty Buildings Must Use Energy | Carbon Lighthouse." Accessed May 14, 2021. https://www.carbonlighthouse.com/covid-building-occupancy-energy-use/.

Ehrlich, P. R., and A. H. Ehrlich. "Can a Collapse of Global Civilization Be Avoided?" *Proceedings of the Royal Society B: Biological Sciences* 280, no. 1754 (March 7, 2013): 20122845–20122845. https://doi.org/10.1098/rspb.2012.2845.

"Energy Information Administration (EIA)- Commercial Buildings Energy Consumption Survey (CBECS) Data." Accessed May 14, 2021. https://www.eia.gov/consumption/commercial/data/2012/.

Epa, Us, and Climate Change Division. "What Climate Change Means for Texas." Accessed May 14, 2021. www.epa.gov/climatechange.

Fant, Charles, Brent Boehlert, Kenneth Strzepek, Peter Larsen, Alisa White, Sahil Gulati, Yue Li, and Jeremy Martinich. "Climate Change Impacts and Costs to U.S. Electricity Transmission and Distribution Infrastructure." *Energy* 195 (March 15, 2020): 116899. https://doi.org/10.1016/j.energy.2020.116899.

"Frequently Asked Questions (FAQs) - U.S. Energy Information Administration (EIA)." Accessed May 14, 2021. https://www.eia.gov/tools/faqs/faq.php?id=97&t=3.

Hendryx, Michael, Evan Fedorko, Andrew Anesetti-Rothermel, Michael ; Hendryx, Evan ; Fedorko, and Anesetti-Rothermel Andrew. "A Geographical Information System-Based Analysis of Cancer A Geographical Information System-Based Analysis of Cancer Mortality and Population Exposure to Coal Mining Activities in Mortality and Population Exposure to Coal Mining Activities in Digital Com." Accessed May 14, 2021.

https://researchrepository.wvu.edu/faculty_publications.

Holifield, Ryan. "DEFINING ENVIRONMENTAL JUSTICE AND ENVIRONMENTAL RACISM." *Urban Geography* 22, no. 1 (2001): 78–90. https://doi.org/10.2747/0272-3638.22.1.78.

"IPCC Report Global Warming of 1.5 C: Summary for Policymakers." Switzerland, 2018.

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. *2013*. Cambridge: Harvard University Press, 2013.

"Polar Vortex Responsible for Texas Deep Freeze, Warm Arctic Temperatures | | UN News." Accessed May 14, 2021. https://news.un.org/en/story/2021/03/1086752.

Tennessee Valley Authority. "Our Power System." Accessed May 14, 2021. https://www.tva.com/energy/our-power-system.

"The General Rules of the Methodist Church | The United Methodist Church." Accessed May 14, 2021. https://www.umc.org/en/content/the-general-rules-of-the-methodist-church.

United Nations Department of Economic and Social Affairs. *Climate Change Resilience: An Opportunity for Reducing Inequalities*, 2016.

United States Environmental Protection Agency. "Greenhouse Gas Equivalencies Calculator." Accessed May 14, 2021. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

Watts, Nick, Markus Amann, Nigel Arnell, Sonja Ayeb-Karlsson, Kristine Belesova, Maxwell Boykoff, Peter Byass, et al. "The 2019 Report of The Lancet Countdown on Health and Climate Change: Ensuring That the Health of a Child Born Today Is Not Defined by a Changing Climate." *www.Thelancet.Com* 394 (2019). https://doi.org/10.1016/S0140-6736(19)32596-6.

Willow, Anna J. "The New Politics of Environmental Degradation: Un/Expected Landscapes of Disempowerment and Vulnerability." *Journal of Political Ecology* 21, no. 1 (December 1, 2014): 237–57. https://doi.org/10.2458/v21i1.21135.