

**2018 CARBON EMISSIONS**  
**AT FIRST PRESBYTERIAN CHURCH OF SAN ANSELMO:**  
**AUDIT RESULTS, ANALYSIS, AND RECOMMENDATIONS**

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**Rev. Douglas Olds**

FPCSA Parish Associate

Doctoral Candidate, San Francisco Theological Seminary

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**ABSTRACT**

First Presbyterian Church of San Anselmo's (FPCSA) 2018 carbon emissions are estimated, at an 85% confidence interval, between 103.4 and 141 metric tonnes of CO<sub>2</sub>e (e=equivalents). Facility emissions made up 27.5% of the total footprint, with the vast majority of that comprised of emissions from natural gas heating of the buildings devoted to FPCSA operations. Personnel carbon emissions in the form of staff, officer, and choir automobile commuting made up of about 18% of the total year's operational carbon footprint. Fellowship activities of mission trip (25%-30%), food, meals and coffee hours (2.7%) and the flower program (4-7% range) made up the largest portion of the church's carbon footprint. Both the jet travel for mission and the flower program have a large range of scientific uncertainty as to their maximum. Finally, indirect emissions (from the transport of goods and services and embedded emissions in the supply chain of manufactures and material throughput) are estimated to make up about 20-25% of the total carbon footprint of FPCSA's 2018 operations.

The amount of carbon dioxide gas emitted by the average of the range presented can be visualized as filling about 22 (3-5 person) hot air balloons. If the carbon dioxide gas were converted into solid carbon, it would fill about 55% of a standard railroad boxcar.

A number of initiatives could decrease FPCSA's carbon footprint going forward. In addition, denominational overtures could spread the ethic of carbon neutrality as the primary means of spiritually instituting Atmospheric Trusteeship, which may be the Holy Spirit's special concern in today's global ecological crisis. The most germane initiatives proposed are for FPCSA's Session and congregation to intensify a conversation about "relocalizing" mission. Additionally, this report explores initiatives for taking FPCSA to carbon neutrality in keeping with PCUSA policy and General Assembly resolutions. To that end, the report will suggest a combination of CO2 mitigation practices carried out first followed by a fundraising effort to purchase appropriate carbon offsets. Taking FPCSA to "carbon neutrality" would fulfill the denomination's call to "practical discipleship" through the institutional virtue of carbon thrift. Currently-unchurched individuals and families in our local Southern Marin communities may be attracted to a faith institution and congregation that practices carbon neutrality, atmospheric trusteeship, and faith-forward Earth Care ethics and lifestyles.

## **PROJECT BACKGROUND: When and Where?**

Along with water, the atmosphere is a fundamental creation of God for the flourishing of human and non-human life. Carbon loading of the atmosphere from human activity threatens to cause (additional) catastrophic environmental degradation, social upheaval, extinctions, and unjust distribution of costs and privation from climate and ecological change. In terms of God's justice and humanity's mission for global creation care (Gen 2.9-15 et al.), Christians have a special call to reduce the carbon emissions from their economic and householding activities. Churches and their leaders that discern this call ought to adopt a goal of carbon reduction if not neutrality. A minister trained in the praxis of assessing and reducing carbon emissions may then guide an institution to abate emissions from its operations as well as deliver a prophetic and ethical challenge to its members to work for the same in home, church, and society.

In 2017, the Union of Concerned Scientists petitioned the faith community, specifically the Christian Church, to take more of a vanguard and leadership role in combating global warming and Climate Change. Rev. Douglas Olds had begun in 2007 a ministry of leading Presbyterian Church (USA) (PCUSA) institutions toward measurement of carbon emissions and promote the move toward institutional carbon neutrality. In 2008, Rev. Olds led carbon audits of First Presbyterian Church of San Anselmo, of St. John's Presbyterian Church of San Francisco, and, in 2009, of San Francisco Theological Seminary.<sup>1</sup> While the latter was the first carbon audit of a seminary in the nation and was accompanied by press releases and presentation to the assembled Presidents of all PC(USA)

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<sup>1</sup> <http://www.douglasolds.net/publications/sfts-green-seminary-initiative>

seminaries, only St. John's in San Francisco took the information from the audit to institute carbon neutrality. Carbon neutrality was and continues to be the policy of the PCUSA (see below). St. John's apparently became the first Bay Area church of any denomination to become carbon neutral. However, it did not follow up renewing its carbon neutrality in later years.

Also in 2017, Rev. Olds decided to pursue a Doctor of Ministry Dissertation and update his ministry in church and society towards his denomination's vision of carbon neutrality. His project A CREATION-CARE LEADERSHIP PRAXIS FOR CARBON NEUTRALITY AT CHURCHES: PROCLAMATION FOR AWARENESS, METHODS FOR AUDIT, AND AVENUES FOR MITIGATION was approved as a topic by the Advanced Pastoral Studies Committee at San Francisco Theological Seminary (SFTS) in June of 2018, and his project design was finalized and approved by the same in November 2018.

Rev. Olds is in the process of carrying out theological and methodological research to develop a "decarbonizing ecclesiology" praxis to be shared regionally with representatives of congregations participating in the Marin Interfaith Climate Action. On September 25, 2018, the Session of First Presbyterian Church of San Anselmo (FPCSA) in California formally endorsed Rev. Olds' application for FPCSA to act as the demonstration congregation and facility for developing a decarbonizing ecclesiological praxis. The praxis under development includes theological reappraisal and reconstruction, the development of spiritual practices and virtue development constituting an individual practice of "Atmospheric

fellowship and trusteeship,” preaching about the crisis of Global Warming and Climate Disruption and Injustice, and the promotion of individual and collective action through church leadership and changes of awareness.

### **DENOMINATIONAL BACKGROUND: Why?**

Since at least 1981, the precursor denominations to PC(USA) have endorsed creation care and environmental stewardship as a primary church goal, and since at least 1993 the PC(USA) has signaled alarm regarding global climate change under the influence of industrial-emitted carbon dioxide (CO<sub>2</sub>) and other greenhouse gases:

The 215th General Assembly (2003) calls on the United States government to join the world effort to reduce greenhouse gas emissions and to develop and enact a national emergency response, underwritten by law, with adequate financial support, and economic enforcement mechanism, to be fully functioning by 2005, with targeted reductions by that time. The 217th General Assembly (2006 [Item 09-22]) asked that the church ask its members to make a bold witness by aspiring to carbon-neutral lives. It was noted that “without significant changes in public policy and corporate behavior to complement actions of personal discipleship,

massive and irreversible climate changes will only accelerate over the next century.<sup>2</sup>

In 2006, “the Presbyterian Church USA, (PCUSA) asked its 2.3 million members each to ‘make a bold witness by aspiring to carbon-neutral lives. (Carbon neutrality requires our energy consumption that releases carbon dioxide into the atmosphere be reduced and carbon offsets purchased to compensate for those carbon emissions that could not be eliminated.)’ This resolution was passed by the PCUSA’s biennial General Assembly meeting in Birmingham, Alabama in late June...[T]he resolution sailed through on the Floor of the General Assembly on the consent calendar after being endorsed by the Social Justice Committee by a 55-3 margin with three abstentions.”<sup>3</sup>

At the 218th General Assembly in San Jose, the 2006 Referral: Item 09-22. Commissioners’ Resolution. On Calling All Presbyterians to Take Positive and Immediate Steps to Live Carbon Neutral Lives was answered by Item 09-10 of the Advisory Committee on Social Witness Policy, “The Power to Change: U.S. Energy Policy and Global Warming,” and ratified by the General Assembly. This document reaffirmed the previous statements of General Assemblies, even

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<sup>2</sup> MINUTES, 218th GENERAL ASSEMBLY, 2008 PART I: JOURNAL, p. 935 accessed 6/23/09 at <http://www.pcusa.org/ogaresources/journal2008.pdf>

<sup>3</sup> [https://web.archive.org/web/20070927182418/http://www.climate.org/topics/climate/presbyterian\\_climate\\_neutral.shtml](https://web.archive.org/web/20070927182418/http://www.climate.org/topics/climate/presbyterian_climate_neutral.shtml)  
Accessed 10 February 2019.

going beyond it to affirm a covenant life of carbon neutrality to be a form of “practical discipleship.”<sup>4</sup>

## **PROJECT PARTICIPANTS: Who?**

Project Leader: Rev. Olds’s pre-ministry background in environmental science and policy prepared him to complete carbon audits of two PC(USA) churches and of San Francisco Theological Seminary during 2008-9. In those projects, I (Rev. Olds) designed a methodology for measurement of carbon footprints and gave recommendations for implementing their reduction and abatement based on best practices available at the time.

Working group. I have representatives working with me to replicate this project at other Marin faith institutions. The first round of the project involves participants from Congregation Kol Shofar, First Presbyterian Church of San Rafael, Marin Unitarian Universalist, and Good Shepherd Lutheran, Novato. Later rounds of this project and replication of praxis are intended in other local churches and synagogues, including possibly at Westminster Presbyterian Church of Tiburon in addition to these 4 Working Group Congregations.

Advisory group. A group of four FPCSA congregants is supporting me with critical feedback and robust evaluatory comments regarding my carbon audit methodology. In addition to presenting my methodology of carbon audits for their

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<sup>4</sup> Minutes, 2006, Part I, pp. 50, 52, 895–98. Quoted at <http://www.pcusa.org/ogaresources/journal2008.pdf> (page 91). Accessed on 6/23/09

review and verification, I have facilitated encompassing deliberations with them regarding the responsible use of scientific facts and findings (and facts versus findings) in the pulpit and general pastoral ministry. The Advisory Group is also verifying my evaluations of this project's effectiveness.

## SUMMARY OF FINDINGS: How Much?

SUMMARY of FINDINGS							Page   9
2018 FPCSA CARBON AUDIT							
Prepared by Rev. Douglas Olds, February 2019							
FACILITIES		metric tonnes, CO2equivalents %			Confidence		
	natural gas	22.06	21.3%	High	24.27		
	electricity	0.00	0.0%	High	3.00		
	water	0.27	0.3%	High	0.29		
	waste	2.53	2.4%	Low-Med	3.28		
	materials	3.59	3.5%	Low-Med	4.67		
	subtotal: Facilities		27.5%				
PERSONNEL							
	staff commuting	8.96	8.7%	High	9.86		
	officers commuting	4.21	4.1%	Medium	5.05		
	choir + special instrumentalists	5.67	5.5%	Medium	7.08		
	subtotal: Personnel		18.2%				
FELLOWSHIP							
	food program	2.77	2.7%	Medium	3.46		
	mission trip	25.94	25.1%	Low	41.51	29.4%	
	flower program	4.72	4.6%	Low	7.08		
	subtotal: Fellowship		32.3%				
INDIRECT EMISSIONS		22.67	21.9%	Low	31.74		
	<b>TOTAL CO2e emissions, tns</b>	<b>103.39</b>	<b>100.0%</b>	medium	"±/- 30%"	<b>141.30</b>	Confidence Range

[Notes:

[Confidence interval approximately at an 85% level of probability.

[CO2e: Carbon dioxide and carbon dioxide equivalents (see text).]

## ANALYSIS AND INTERPRETATION OF FINDINGS

An inspection of the previous table indicates that the top three contributors to FPCSA's 2018 carbon footprint were the 6-congregant mission trip to San Juan,

Puerto Rico, natural gas for church plant heating, and indirect (Scope III) emissions from embedded supply chain processes.

As noted above, I undertook a Carbon Audit at FPCSA based on its 2007 operations. I have updated my methodology since that time, while the science of converting material throughputs into carbon dioxide emissions and its equivalents has become more encompassing. Accordingly, my 2007 and 2018 carbon audit studies at FPCSA are not directly comparable, with the following exceptions.

- 1) Electricity use for the 72 Kensington campus was 18.1% higher in 2018 vs. 2007.
- 2) Natural gas (normed for climate) was 10.8% higher.
- 3) Water use for the campus was 14.6% higher.
- 4) Mission travel person-miles was 9.7% lower.
- 5) Staff commuting was 42.7% lower.

The increases in water and natural gas utility usage can likely be attributed, per head of Buildings and Grounds Committee, to the REST program which was not operating in 2007. Mission travel's carbon footprint declined because ten congregants flew to the Gulf Coast in 2007 for Hurricane Katrina relief, while only six flew to Puerto Rico in 2018. Staff commuting's reduced carbon footprint derives from three sources of change:

- a) Improved gas mileage estimates applied to staff vehicles.
- b) Elimination of van travel engaged by the Associate Pastor for 2007's youth outings.

- c) Significant reduction in the commuting distance of 2018's Director of Music versus 2007's.

While I do not advocate in any way inhibiting Personnel and their commuting footprints beyond what they voluntarily undertake, I do believe that from a cost perspective, the issue of electricity's increase in usage might be looked into by FPCSA's Facilities Committee. FPCSA has both solar panels and is a participant in Marin Clean Energy's "Deep Green" program which delivers electricity from renewable sources. FPCSA's carbon footprint thus is for all intents and purposes zero (although the infrastructure for Deep Green would have some marginal, embedded carbon footprint). Electricity conservation at FPCSA would, however, reduce its expense.

Because FPCSA is "Deep Green" and receives its electricity from renewable, zero-carbon emission sources, and because one of the goals for the reform of the domestic energy grid is to replace fossil fuel combustion with renewable sources for electricity, the recommendations that follow will propose ways in which natural gas usage can be reduced, for a scale-back of its carbon footprint.

An important and significant portion of the Environmental Justice movement focuses on processes and principles of the "Just Transition" from an extractive capitalism to a regenerative economy.<sup>5</sup> A primary principle of the Just Transition ("Transition Town") Movement is "relocalization." That principle guides individuals and systems to re-orient their consumption to sources and places

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<sup>5</sup> <https://climatejusticealliance.org/just-transition/> accessed 3/6/19.

closer to their place of residence, rather than engaging in long-distance travel and purchases of goods and services with large embedded emissions.

Relocalization is consistent with the virtue of “loyalty to place and planet” that I have been preaching. At the time of my Carbon Audit of FPCSA operations in 2007, I had hoped to begin the conversation in the church regarding long-distance mission and the desirability of relocalization. As will be noted in the recommendation section following, FPCSA and its stakeholders might fruitfully explore “relocalization” in the design of its mission program. Currently, the mission program at FPCSA is the largest contributor to its footprint.

Returning to the issue of indirect emissions, the range of confidence I have for its contribution to FPCSA’s carbon footprint is from 22.7 to 31.7 metric tonnes of CO<sub>2</sub>e. (Scope I activities were calculated with conversion factors taking into account indirect emissions.)

In addition to the three major contributions to the FPCSA’s carbon footprint: mission, heating, and indirect emissions, the flower program surprised with its contribution to the total. It almost doubles the food program, or more, if considerations of uncertainty are estimated. Education and modification of the flower program may bring some meaningful reduction to the church’s carbon footprint (see also below).

The final analytical finding of this report is a quantification of the social cost incurred (or damages inflicted) as a result of this quantity of CO<sub>2</sub>e emissions. Just Transition and PC(USA) policy both dictate that every effort to reduce carbon emissions should take place before an exploration of purchasing

carbon offsets is initiated. The first step in this process is thus to cut carbon emissions wherever possible, then quantify the social cost of carbon emissions, applying that financial cost to the purchase of appropriately-priced and -targeted carbon offsets (also referred to as Certified emission reductions [CERs]).

Offsets are a voluntary self-tax to cover the social cost, plus an increment to fund reparations, technological research, and progressive rebates for the poor and climate-vulnerable classes in other countries. Carbon offsets available from various vendors range from \$.80/tonne CO<sub>2</sub> up to \$20/tonne.<sup>6</sup> It is important to note this range is devoted to marginal costs of CO<sub>2</sub> abatement. That is, an individual project might result in carbon throughput efficiencies that mitigates a system's emissions of CO<sub>2</sub> at \$.80/tonne. Examples of this kind of marginal cost project are CERs offered through the United Nations.<sup>7</sup> These include investments in the electrification of public transport in a mid-sized city in China and investments in wind power in developing countries.

As beneficial as these marginally-priced projects are, purchases of their CERs to offset carbon emissions by rich Westerners do not adequately reflect the actual cost to ecological systems and economically marginalized and climate-vulnerable populations. Research into the "average social cost of abatement" must reckon the costs of social compensation and technological substitution for

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<sup>6</sup> \$3/tn Co<sub>2</sub>e is the average of voluntary offsets purchased in 2017. Kelley Hamrick and Melissa Gallant, "Unlocking Potential State of the Voluntary Carbon Markets 2017," last modified May 2017, accessed March 6, 2019, <https://www.cbd.int/financial/2017docs/carbonmarket2017.pdf>.

<sup>7</sup> "United Nations Online Platform for Voluntary Cancellation of Certified Emission Reductions (CERs): All Projects," accessed March 6, 2019, <https://offset.climateutralnow.org/allprojects>.

the redress of over-consumption of combustible hydrocarbons and fossil fuels by the global wealthy.

I therefore suggest that carbon offsets from internet vendors—even those noted as “reputable”—significantly underprice the social and environmental cost of CO<sub>2</sub> and its equivalents. The range of average social cost presented in the literature ranges from \$37<sup>8</sup> to \$68<sup>9</sup> up to \$220<sup>10</sup> per tonne of CO<sub>2</sub>e emitted. While neo-classical economic rationality would propose paying the least amount for a marginal reduction of a tonne of CO<sub>2</sub> emissions, I believe that morality—and the implication of Jesus’ caution that “it is easier for a camel to go through the eye of a needle than for a rich man to enter the kingdom of God” (Mt 19.24)--demands that wealthy Christians be especially scrupulous to pay the full average social cost of the atmospheric damage they inflict, especially for lifestyle choices that fulfill non-subsistence, hedonic desires. Thus a wealthy Christian might consider a tiered offset pricing structure: paying a carbon offset at the lower end of the given range for subsistence CO<sub>2</sub> throughput (e.g. commuting for earning a

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<sup>8</sup> US Government estimate as of 2015. Peter Howard, Ph.D. and Peter Howard and Derek Sylvan, “Expert Consensus on the Economics of Climate Change,” Institute for Policy Integrity (December 2015) accessed 3/6/19.

“The current central estimate of the social cost of carbon is roughly \$40 per ton. While this is the most robust and credible figure available, it does not yet include all of the widely recognized and accepted scientific and economic impacts of climate change. For that reason, many experts agree this is far lower than the true costs of carbon pollution.” “The True Cost of Carbon Pollution,” Environmental Defense Fund, accessed March 6, 2019, <https://www.edf.org/true-cost-carbon-pollution>.

<sup>9</sup>A “present value” of (future total) climate change damages.

[https://www.epa.gov/sites/production/files/2016-12/documents/social\\_cost\\_of\\_carbon\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf) accessed 3/6/19. In my report of the 2008 Carbon Audit of San Francisco Theological Seminary, I reported a carbon offset cost of \$65. -- <http://www.douglasolds.net/publications/sfts-green-seminary-initiative> accessed 3/6/19.

<sup>10</sup> Stanford University, “Estimated Social Cost of Climate Change Not Accurate, Stanford Scientists Say,” *Stanford News*, last modified January 12, 2015, accessed March 6, 2019, <https://news.stanford.edu/2015/01/12/emissions-social-costs-011215>

livelihood, subsistence heating and cooking, and a basic diet) while paying for offsets at a higher social cost for luxuries (including jet and leisure travel by automobile, an animal-based diet, and materials and technology devoted to entertainment). For my personal carbon footprint, I have priced offsets at \$68/tonne of CO<sub>2</sub> emissions for subsistence activities and necessary travel and at \$220/tonne for beef, beverages, and technology consumption—with the objective of reducing the latter going forward.

If the moral reasoning presented is valid--that average social cost rather than marginal cost of abatement ought to determine the appropriate range of costs an individual and an institution should consider when pricing its carbon offset--I calculate that at the average of the range of the FPCSA 2018 carbon footprint (122.3 tonnes) and the social cost of that footprint (@\$68/tonne) suggests a carbon offset liability for FPCSA's 2018 operations at \$8320. Of that figure, \$1764 is the portion devoted to offsetting the 2018 mission trip to Puerto Rico.

## **RECOMMENDATIONS AND INITIATIVES: What Now?**

When making recommendations for FPCSA to reduce its carbon footprint, I will apply four principles derived from the Climate Justice and Faith-based movements:

- 1) Electrification
- 2) Relocalization

3) Subsidiarity

4) Carbon Neutrality

One or more of these principles will underly the recommendations that follow.

***None of these recommendations have been instituted and are designed to be more as ideas and talking points than hard and fast policies.***

Electrification: One of the primary systemic initiatives derived from the movement to phase out fossil fuel consumption is to move as much of hydrocarbon combustion activities to the electrical grid. The rationale behind that principle is that the electrical grid has a contemporary foundation for close to zero CO<sub>2</sub>e emissions. FPCSA's participation in Marin Clean Energy's "Deep Green" program makes it adapted to shifting fossil fuel combustion, specifically of natural gas in heating, to the electrical grid with a meaningful reduction of its carbon footprint.

To that end, the first recommendation is that the Office Annex restructure heating sources during the winter season. This could entail the re-programming of the smart thermostat in the Office Annex to shut off heating periodically during working hours and possibly replacing heating sources with electrical radiative space heaters for the Head of Staff's, the Bookkeeper's and the Office Administrator's workspaces (should, of course, they agree). A fourth electrical heater could be applied in the copying room for those days of producing the Sunday bulletins.

In addition to the electrification of these three regular employees' work space heating, the Conference Room might be decommissioned as much as possible during winter months. This would shift activities like the Transition Group, the Buildings and Grounds and Church and Society committee meetings to the library which has its own dedicated room heating. This would leave the need to heat the Conference Room space for Staff and Worship Committee meetings. As those latter two meetings are usually back to back, the Office Annex could be heated by natural gas by programming the thermostat for Wednesday afternoons only, for example. The rest of the week, the office annex could be heated solely by electrical sources per this suggestion.

Congruently, the Preschool's bookkeeper office located next to the nursery appears to have a solo worker. As that room also might be currently heated by the central natural gas furnace, that worker could be enlisted with the same recommendation: to heat her work space with direct radiative heating rather than through the forced air natural gas furnace.

One systemic necessity for electrification of hydrocarbon combustion activities is the massive need to build out electrical vehicle (EV) charging stations nationally and locally. I'm told that the town of San Anselmo has recently rolled out a plan to install such charging stations municipally. In addition, Marin Clean Energy has resources available for partially financing the same. Recommended would be a church/public (school) initiative to harmonize these two programs for the installation of EV charging stations at Wade Thomas Elementary School and

which could include the accessibility for charging the EVs of FPCSA's Sunday attendees and evening stakeholders attending church meetings.

Relocalization: The Transition Town's movement's principle of "relocalization" adapts the ethic of "bioregionalism" proposed during the awakening of Global Warming awareness in the early- to mid-1990s. These principles direct communities to buy commodities and food from local sources to the fullest extent possible—avoiding items that require a large transportation input and to sojourn closer to home and thus avoid jet travel. Two recommendations flow from this principle.

First, and more marginally, the flower program for Sunday Worship might begin to purchase its items from local farmers' markets rather than vendors of international and long-distance bouquets. While flowers at local farmers' markets might cost more, they inflict a lower social and ecological cost by their carbon footprints. Such a policy would change the mix of flowers procured, probably and most importantly high-carbon footprint roses. In addition, a single vendor source might reduce the automobile travel applied to scoping out the various retail vendors for their weekly offerings. Full Belly Farm, which I believe comes to the Marin Farmers' Market, grows and sells flowers as an income producer for those seasons when they do not have a lot of produce. I invite the flower program to resource with me and others about relocalizing possibilities in the flower program. The flower programmer cares a lot about what she produces for our congregational common good. She may be able to establish a relationship with

a vendor like Full Belly Farm, and in that relationship suggest blossoms and greenery that they could plant and provide to our church on a seasonal and/or yearly basis.

Second, the principle of relocalization could be applied to FPCSA's Mission Program. While there are values to long-distance mission trips—humanitarian, educational, fellowship, pedagogy, and networking—many of these values might be accomplished closer to home, at a compelling reduction of its carbon footprint. I recognize a certain moral ambiguity<sup>11</sup> of long-distance church mission trips while at the same time give appreciation to the congregants who committed to Puerto Rican resilience. That mission crew included very talented people, and I hope that cadre of FPCSA mission workers can be enlisted to give input on this recommendation. Moreover, Puerto Rico is a commonwealth loaded with bad history in relationship to the U.S., so to the extent that our mission team was able to develop some social capital there, that should also be taken into account when deliberating a repeat. I would hope that the mission team can add input about the positive aspects of their connection with Puerto Rico. I acknowledge that important ecological and Earth Care values are at stake in relocalization, and yet other values, such as social capital and trust with

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<sup>11</sup> Lupton, Robert. *Toxic Charity: How the Church Hurts Those They Help and How to Reverse It*. HarperOne, 2011. Charitable mission can enable poverty by engendering dependence and conveying unintended consequences. Lupton (2011, 8-9, emph. added) argues for mission that supports the local employment and skills base of the host society and promotes the following principles for appropriate charitable activity, including church mission trips: "Never do for the poor what they have (or could have) the capacity to do for themselves. Limit one-way giving to emergency situations. Strive to empower the poor through employment, lending, and investing, using the grants sparingly to reinforce achievements. Subordinate self-interests to the needs of those being served. Listen closely to those you seek to help, especially to what is not being said...Above all, do no harm."

mission partners, should be protected and recognized. At any one point in time, some of these values will receive priority only to make way for others as the situation permits. A third suggestion thus follows about mission: link mission trips to gradual moves toward carbon neutrality, or focus on missions that have local partners who would identify projects that simultaneously build local resiliency and serve as carbon offsets for FPCSA of its mission travel.

For an example of mission relocalization, important humanitarian and networking values for mission could be realized in the California Central Valley, say a Habitat for Humanity building project near Fresno targeted to low-income immigrants who are seeking to avoid deportation. A four-car caravan from FPCSA carrying 10 mission workers to Fresno would put out a carbon footprint of about .8 tonnes of CO<sub>2</sub>e. Contrast this with the 34 tonnes-plus for a 6 person mission trip for humanitarian building in Puerto Rico. Relocalizing FPCSA's mission program in this way would effect a 28% reduction in the institution's total carbon footprint.

Other relocalized venues for FPCSA mission include Paradise/Chico, the Canal District of San Rafael, addressing vermin issues in Marin City, etc. If it is decided by FPCSA stakeholders that long-distance humanitarian concerns warrant an eventual and committed FPCSA mission response, such may be addressed by either or both of the following as substitutes for long-distance travel:

- 1) Financially support mission projects through Presbyterian Disaster Assistance which can mobilize support with more proximate workers at a

smaller carbon footprint than FPCSA members flying transcontinentally.

Alternatively, if a more proximate church or Presbytery is sending mission workers, FPCSA can support those financially with a lower systemic carbon footprint.

- 2) Direct financial support by FPCSA of local workers for humanitarian projects that command its concern and attention. Such direct financial support would invigorate local economies and allow for the application and apprenticeship development of local skills and self-reliance, all at a zero-carbon footprint.

Another option for relocalizing and cutting down on the very large carbon footprint of jet travel is to employ video conferencing rather than face-to-face meetings with FPCSA's missionary partners rather than having him or her fly to SFO to meet with the church in person. Accountability and familiarity are necessary objectives when engaging mission partners, but it may be that video conferencing from a remote site allows for enough accountability and collegiality at a significantly lower carbon footprint.

Subsidiarity: A key principle of Roman Catholic social thought is “subsidiarity,” holding that “nothing should be done by a larger and more complex organization which can be done as well by a smaller and simpler organization. In other words, any activity which can be performed by a more decentralized entity should be.”<sup>12</sup>

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<sup>12</sup> David A. Bosnich, “The Principle of Subsidiarity,” Acton Institute, July 20, 2010, accessed March 8, 2019, <https://acton.org/pub/religion-liberty/volume-6-number-4/principle-subsidiarity>.

Applying this principle to the PC(USA) denomination may lead to a more “relocalized,” regionalized, and decentralized structure that requires far less long-distance jet travel for conferencing and networking. FPCSA has extensive experience in introducing overtures to its denomination on various justice and environmental issues. Because Climate Change is a justice issue, there are a number of denominational overtures that might usefully address the PC(USA)’s carbon footprint and re-orient its societal leadership on Global Warming and Climate Change:

- 1) Make PC(USA) General Assembly an every 4 years process, rather than biennial as currently staged.

General Assembly has a large carbon footprint with Presbyterians flying in from all over the country, many of whom are spectators and lobbyists not involved in direct conduct of denominational business. To take up the business of the denomination, a second denominational overture is proposed:

- 2) Applying the principle of subsidiarity, devolve policy making from General Assembly councils to synods and presbyteries as much as possible, ratifying core policies at a quadrennial General Assembly.

Included in this enabling of subsidiarity at the Synod and Presbytery levels for general policy making, mission tasks should also be allocated to this principle as much as possible. This would include tasking regional mission bodies with regional mission outreach. In the case of a natural disaster on the East Coast, its particular synod and surrounding presbyteries would respond first with personnel,

with financial support from outside synods and presbyteries replacing personnel flying in with their associated carbon footprints. In the case of California eco-disasters (see 5), below), the Synod of the Pacific and its constituent presbyteries would supply the first line of personnel and mission worker response, accepting financial donations from longer-distance Presbyterians. Some of these financial contributions could be applied to hiring workers from the local economic base should a volunteer force not be extensive enough for the tasks at hand.

3) In addition to the above initiatives for denomination in mission and in policy making that applied the principles of subsidiarity and relocalization, the denominational overtures regarding divestment of PC(USA) funds and pensions from fossil fuel corporations should be continued with FPCSA leadership and support.

4) Eco-Sanctuary planning. Deriving from recommendation 2), above, relocalizing mission suggests that FPCSA facilities be prepared for local eco-disasters, with a supply of canned food<sup>13</sup> and perhaps mattresses,<sup>14</sup> generator(s), seed banking, and phone and EV charging stations laid up in the event of local residential evacuation from

a) Floods

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<sup>13</sup> Costco's website is a source of bulk emergency meals at a reasonable cost.

<sup>14</sup> A number of vendors of foam mattresses surround the business district near Berkeley, CA.

- b) Wildfires
- c) Earthquakes
- d) Toxic spills from storm surges as sea levels rise.

A lesson of 2015's Hurricane Harvey surrounding Houston was that low-lying, coastal petroleum refineries released severely toxic chemicals when flooded. An inspection of the elevation of the Richmond, CA Chevron refinery lands display that much of those lands are less than 10 feet above sea level. Some climate forecasts claim that sea levels may rise by that amount as early as 2040, with storm surges of that height possible prior. Thus, under the principles of subsidiarity and relocalization, FPCSA may be called on to respond to a toxic spill disaster in the intermediate term.

- 5) Another possibility for a FPCSA-researched denominational initiative is for the PC(USA) to call on governments to create carbon footprint standards for and labeling of manufactures and agricultural products.

These would apply the principle that informed consumers can make a responsible decision between competing products based on which has a lower, or more economical, carbon footprint, similar to how consumers check nutrition information on food items. This would relocalize knowledge regarding carbon emissions from expenditures from regulatory bodies to the household, another illustration of subsidiarity.

- 6) FPCSA-researched and -led denominational initiative to call on governments to decommission nuclear power plants near shorelines, at

less than 10 meter elevations which almost certainly will be subject to storm or tsunami surges in the intermediate term.<sup>15</sup> Decommissioning should include radical removal of all radioactive elements and waste storage stocks.

Carbon Neutrality: Congruent with PC(USA) calls and an ethic of earth care trusteeship derived from multiple scriptural authorities, I believe that relatively wealthy Christians are tasked with the greatest scrupulosity and diligence regarding their carbon footprints, even going so far as to heed denominational calls to practice carbon neutrality. As discussed above, the primary avenue for enacting carbon neutrality is to first pare carbon emissions as much as possible, then purchase appropriately-priced and -targeted carbon offsets and units of Carbon Emission Reductions. Above, I noted that the social cost of FPCSA's 2018 emissions was about \$8320, of which \$1764 was allocable to the Puerto Rico mission trip.

This report has made a number of carbon mitigation recommendations regarding heating, flowers, and reduced material purchasing. Once those efforts

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<sup>15</sup> Sea level rise appears inevitable: United Nations Environmental Programme, "3-5°C Temperature Rise Is Now 'Locked-in' for the Arctic" (March 13, 2019), accessed March 14, 2019, [https://gridarendal-website-live.s3.amazonaws.com/production/documents/:s\\_document/466/original/Press\\_release.pdf?1552482132](https://gridarendal-website-live.s3.amazonaws.com/production/documents/:s_document/466/original/Press_release.pdf?1552482132). However, the claim that this range of increased temperature in the Arctic is "locked in" regardless of the institution of 2015 Paris goals of emissions reductions has been challenged: <https://www.carbonbrief.org/factcheck-is-three-five-celsius-of-arctic-warming-now-locked-in?fbclid=IwAR1JqRnDiVBBAdd4ikRfo2hHPfuaArFmnK6NlyqTv9zrMKypuCD1izvY254> accessed 3/17/19.

are begun, I recommend the value of becoming carbon neutral through the purchase of offsets. The value of becoming carbon neutral is three-fold:

- a) It is both diligent and virtuous in what I call Atmospheric Trusteeship, which is fellowship with the Holy Spirit.
- b) It has evangelistic value, in that FPCSA publicizing its carbon neutrality could promote itself to the surrounding, observing community as well as educate that community on what a diligent and scrupulous program of carbon neutrality entails.
- c) It complies with PC(USA) denominational initiatives and calls.

Thus my final recommendation for FPCSA involves an FPCSA budget item/fundraising effort for the purchase of carbon offsets. I believe a current fundraising goal to augment an ongoing budget could be for any of the following amounts:

- a) \$8320 with \$1764 be applied to purchase of offsets near the site of the mission project in Puerto Rico
- b) \$8320 less the mission offset cost of \$1764 if the mission program relocates as recommended
- c) a) or b) less any commitments to reduce other items of the current carbon footprint
- d) More than \$8320 for the purchase of both carbon offsets and investments in energy efficiency, such as radiative heaters (see above) or other heating efficiencies, and/or to prepare the campus as an eco-sanctuary.

Fundraising option a), for example, would ask an average contribution from each member of about \$33. I think an appropriate fundraising strategy for making FPCSA carbon neutral according to the stringent guidelines suggested in this report would make it relatively compelling to FPCSA stakeholders and congregants. Once the funds are raised or an allocation is made from the FPCSA budget, I am willing to consult with the church regarding my research into what makes an offset project alternative best suited to justice and environmental values.