

BECOMING CARBON NEUTRAL

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Becoming Carbon Neutral:

Why and How; It's numbers-intensive:
Many things affect carbon output.
It's not necessary to do them all,
But to know **the whole picture.**

Mount Auburn Example:

Our "church household" and **the IJF Goal.**
How about our individual households?
Can we become a
"Carbon Neutral Congregation"?
As an example to the nation, and the world.
*"Cities and corporations are doing it,
why not us?"*

Part 1: The PROBLEM Why Focus on Carbon?

It's a **"greenhouse gas"** and it's increasing.
(solar warming of our oceans and atmosphere)
How is it measured? **"Parts per Million"** (PPM)
1751: under **300 PPM**
2019: nearly **420 PPM: + 2 every year.**
To sustain current ecosystems:
It was **350 PPM** maximum. . .

Also Measured by Weight:

(1 Gigaton = 1 billion metric tons, each 1000 kg)
(=1 trillion kg, or 2.2 trillion pounds)
356 G-tons of carbon were added since 1751.
HALF of that since **1980** (since James Hansen's
climate-warning testimony)
565 G-tons more will take finish the 2-degrees C.
(Paris Accord. The "Budget")
2,795 G-tons of carbon in the fossil fuel industry's
known reserves (**5x the Budget**)

What are the consequences?

Warming oceans, dying coral,
Devastated ecosystems, rising sea levels,
Monster storms, floods, wildfires, droughts,
Disappearing ice caps, glaciers, water-supplies,

Dying species, habitat loss. . .
(And soon: migrations, refugees, wars)

The Social Justice Dimensions:

Growing economies become carbon producers.
Poor and Low lying regions are at greatest risk.
Poor regions are most affected,
but it's not their doing.
We are doing this TO them. . .

Why is there Still Doubt and Denial?

Our military knows.
The insurance industry knows.
The international scientific community knows.
Exxon Mobil, Gazprom, et al.? They also know.
"Melting ice makes drilling the Arctic easier!"
It's been framed as a "political" issue. . .

But: "It's Not Politics, It's Physics":

The "politics" of climate change:
Industry Lobbyists
and Political Leaders who also know that:
Strong Action would be "Inconvenient. . ."
("Americans for Prosperity" et al)
They invest in the production of "doubt."

Why does Inaction Persist?

Politically: it's our partisanship,
corporate-funded niche media, and corruption.
Personally: it's a complex moral dilemma:
We NEED our cars, airplanes, and electricity.
"Our way of life depends on it." (ie, fossil fuel)

It's Just Hard to Grasp.

The problem seems too big, vague, and diffuse.
Many folks "care" but haven't "acted" yet.
Maybe they don't know how. . .
Maybe they think it's too difficult. . .

It's a Big, Thorny Problem.

Understand that **WE** are the Problem.
The industrial "west," but **especially the USA.**
Our per-household footprint is **5x** that of France.
Let our "guilt" motivate our **Right Action.**
From Problem to Solution. . .

Part 2: The SOLUTION Take Action.

(Thinking both Locally and Globally.)
"Stop Adding Carbon to the Atmosphere."
(. . . faster than it is re-absorbed by forests.)
(That's **"Net Zero"** or **"Carbon Neutral"**)
Set the GOAL, and ACT NOW.

First: Locally, in our Church and our Homes:

MAPC: The IJF Campaign Goal.
"Be the Change You Want for the World."
Act on our ethical beliefs.
To lead, we must **show it can be done...**
(or to learn more about why it can't, yet).

The Three Action Steps to Net Zero:

We are dependent on fossil fuels.
And there is no going "Cold Turkey."
So, three steps:

- 1 Calculate.**
- 2 Reduce (Levels 1, 2, 3).**
- 3 Offset.**

Step 1 Calculate your Carbon:

What is your household's **"Carbon Footprint"?**
Natural Gas, Electricity, Gasoline
Food, Waste, Transportation
Goods and Services (called "Secondaries")
Calculations in **Metric Tons**
(MT: 1000 kg = 2,200 lbs)

Some Helpful Online Calculators:

<https://www3.epa.gov/carbon-footprint-calculator/>
(Archived from January 19, 2017!)
<https://coolclimate.berkeley.edu/calculator>
Shows "reduction" options, all categories.
<https://www.bbc.com/news/science-environment-46459714>
Shows detail of different food impacts.

Annual Household Carbon Production (J&M):

Driving 7,500 mi, 25 mpg	3.52 MT
Alternative: a Prius:	1.46 MT
Cooking 10 CCF gas/year	0.05 MT
Electricity/HVAC (3200 kwh net)	1.52 MT
Alternative: No Solar:	5.23 MT
Air Travel 1 RT to NewYork	0.26 MT

Air Travel 1 RT to Paris 2.44 MT
Secondaries, Goods, Services ??? MT
US Household Average 17 MT
<https://calculator.carbonfootprint.com/calculator.aspx>

Annual Carbon Footprint of Foods and Trash:

8 oz Beef/Week: 0.67 MT
8 oz Pork/Week: 0.14 MT
8 oz Chicken (or Chocolate) 0.10 MT
8 oz Cheese 0.08 MT
Waste: US Avg Household 0.63 MT

Step 2 Reduce your Footprint; Make Changes:

- 1 Short Term, minor “lifestyle” actions
- 2 Medium Term, where/how to live
- 3 Longer Term, home and systems
& Economic considerations

Reduce 1 Thinking Short Term:

The “Low Hanging Fruit”
Conservation: “Reduce, Reuse, Recycle”
Review the itemized footprint numbers.
LED lights, “Expanded Comfort Zone”
Food, Trash, Secondaries
Transportation and Driving habits

Reduce 2 Thinking Medium Term:

Where and How to Live:
Typical 5- to 10-year Choices. . .
Resist Sprawl, Downsize, Smart Design
Electric (or no) Car

Reduce 3 Thinking Long Term:

Home Improvements/Design/Systems:
Insulation, windows, shading, materials, orientation,
systems.
Heat pump, Geothermal: free hot water
Solar Panels: up to 80% annual usage

The Money Question:

Some of this is expensive, so:
“How Long is the **Payback Period?**”
Wrong Question. “ROI” is not the motivator.
It’s not about YOU, it’s about the PLANET.
Instead, look at **20 years of Your Carbon Output.**
And **20 years of your Fossil Fuel Expenses.**
20 years of Duke Bills (brings it back to money):

MAPC’s Example:

Our Church Facility Operations produce:
144 metric tons / year
= 2,880 over the next 20 years.
We’ll spend **\$750,000** on those fossil fuels.
So it becomes an economic choice. . .
Same money: spend it on the fossil fuels,
OR on not needing (most of) them,
And offsetting the rest.
Result: NET ZERO CARBON: it costs nothing.

Household “Thought Experiments”:

Start with 10 or 20 years of **Duke Bills:**
what else could you do with that money?
Cost of a **solar array** = Difference between
a new and a good used car.
New Construction: add about 18%
(= one room) for **near-net-zero systems.**
Tackle your biggest **carbon culprits:**
Trade my car for an Electric?
Stop eating Industrial Beef?

Step 3 Offset the Remainder:

No one can do everything. . . Offsetting:
The final step to “Net Zero” or “Carbon Neutral”
Pay the “actual cost” of your carbon
entering the atmosphere.
Think of it as **“voluntary taxation”** at x%.
It’s surprisingly inexpensive.

What do “Offsets” Buy?

Future **Emission Reductions** equal to what you’ve
produced. Investment in alternative renewable
energy systems, methane capture, etc. Forest
preservation, tree planting.
(one acre mature woods = 15 tons/year, or 3 cars)

Official or Unofficial “Offsets”?

Retail marketplaces (TerraPass, NativeEnergy)
They offer “certifications.”
Or: closer-to-home alternatives
(parks, nature preserves)
Arc of Appalachia, Nature Conservancy
<https://nativeenergy.com/our-approach/carbon-offsets/>
<https://www.cartalk.com/content/global-warming-and-your-car-0>

Average Example:

Average American Household: 17 MT carbon.
Offsets priced at \$50 to \$300 per MT. So:
\$ 850 (on up) per year = Net Zero Carbon.
(before key reduction actions)

Our Case (M&J):

Low Carbon Household, say 6 MT net.
“Certified” offsets would be \$300 – 900/year.
“Unofficial” donation to regional forest preservation:
\$1000 - \$1500/year.

Finally:

Back to Thinking Globally:

1. Influence Public Policy

(Local, National)
Make it a Campaign Issue (All Levels)

2. Join the Movement

Citizen’s Climate Lobby
(the bi-partisan Advocacy Organization)
<https://citizensclimatelobby.org/>
And Bill McKibben’s **350.org**, and the
‘Keep It In The Ground’ movement.

3. Support Nature/Forestry Causes

(Local, Global)
The Nature Conservancy,
The League of Conservation Voters,
many others.

4. Support Renewables

(and other Non-Fossil-Fuel Energy production)

5. Divest from the Fossil Fuel Industry

(McKibben: it worked to end Apartheid.)

RESOURCES:

A general summary of carbon-climate facts:
<http://www.climateconsent.org/pages/carbonmaths.html>
(Cites among others the work of Bill McKibben
(*Rolling Stone* and *New Republic*) also
see his essay in the *New Yorker*,
November 2018).