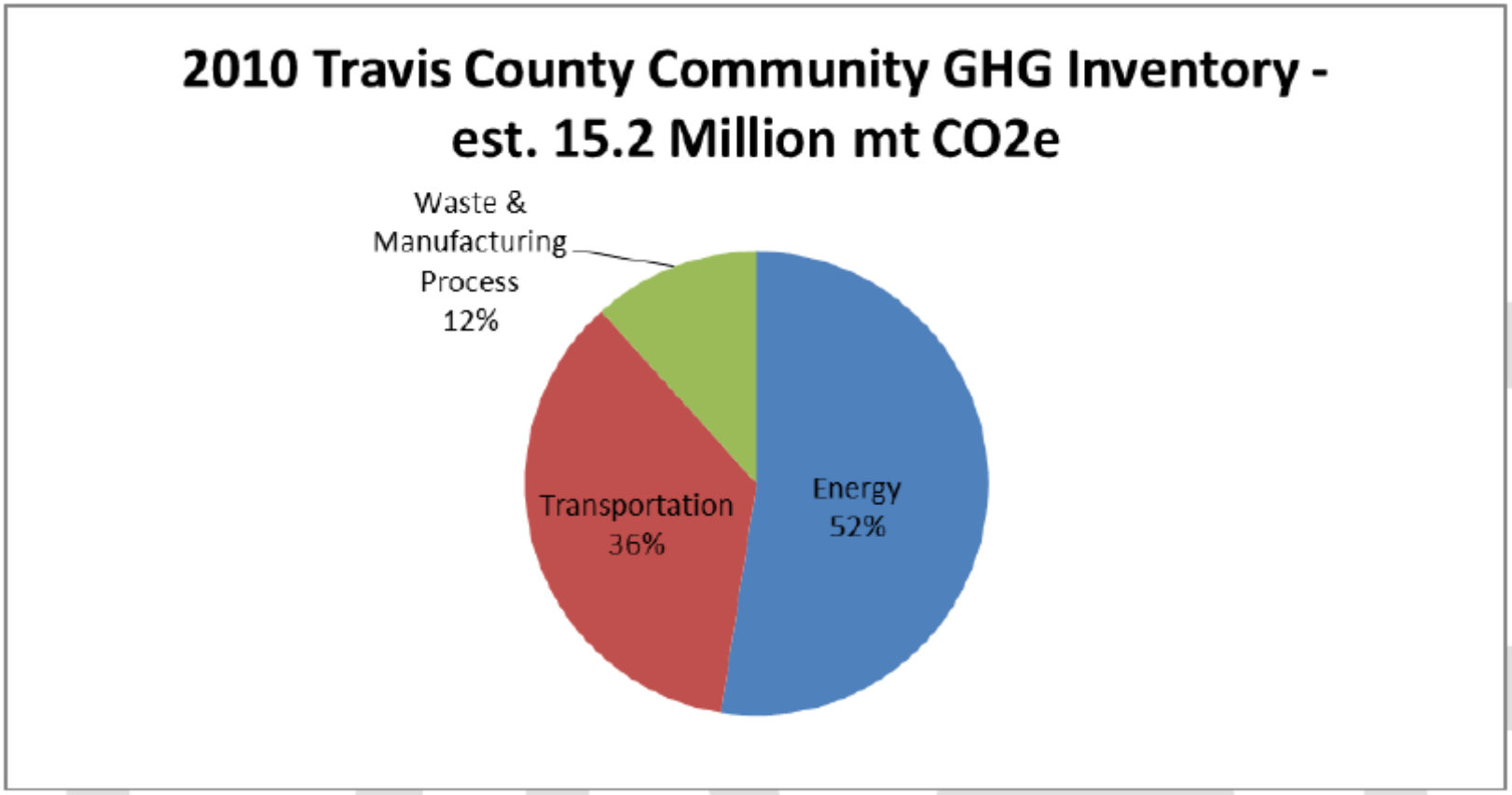
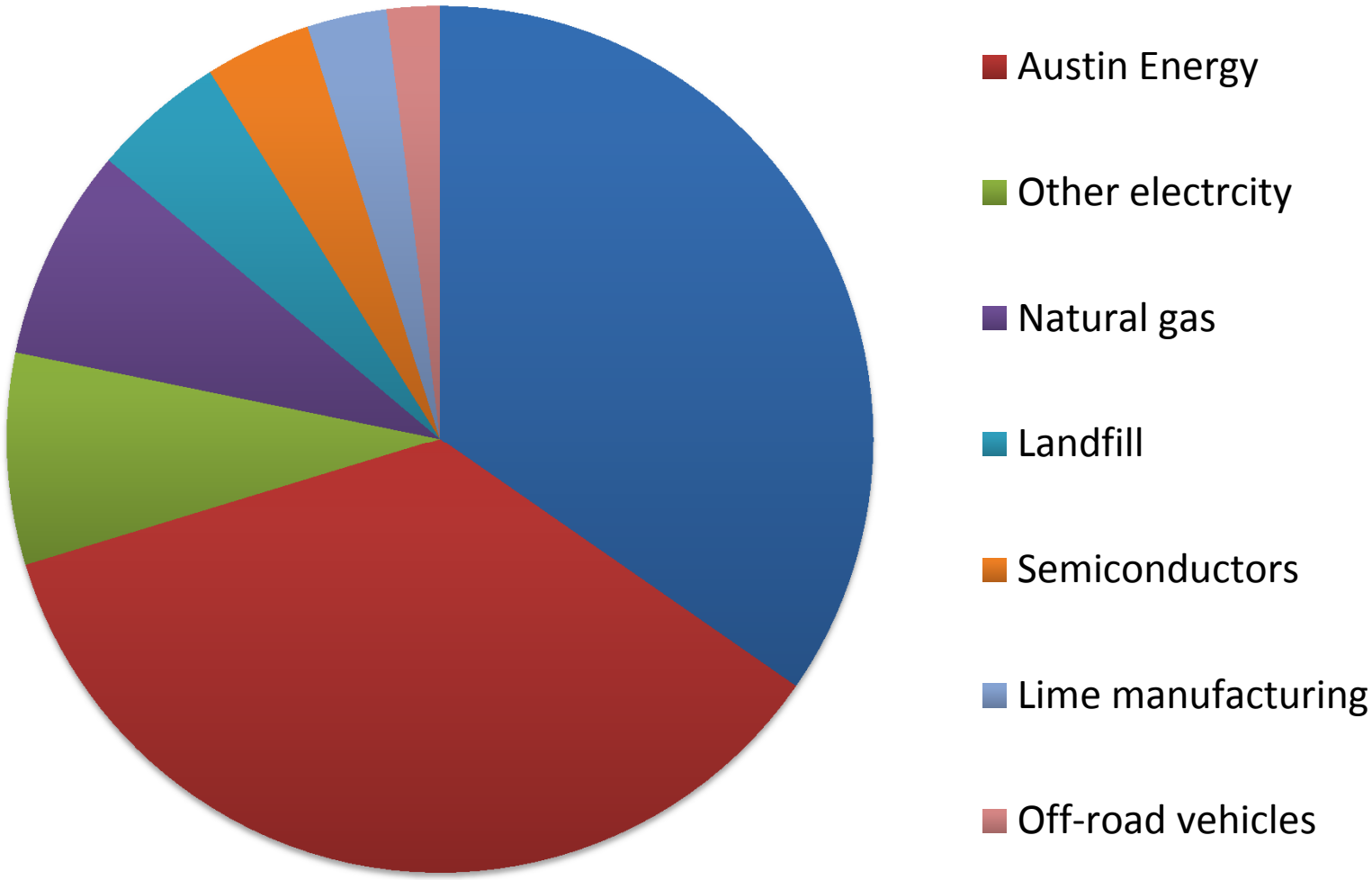
Personal
GHG emissions and impact
Nothing we can not fix

Joep Meijer, Co-Founder Climate Buddies

2009 GHG impact

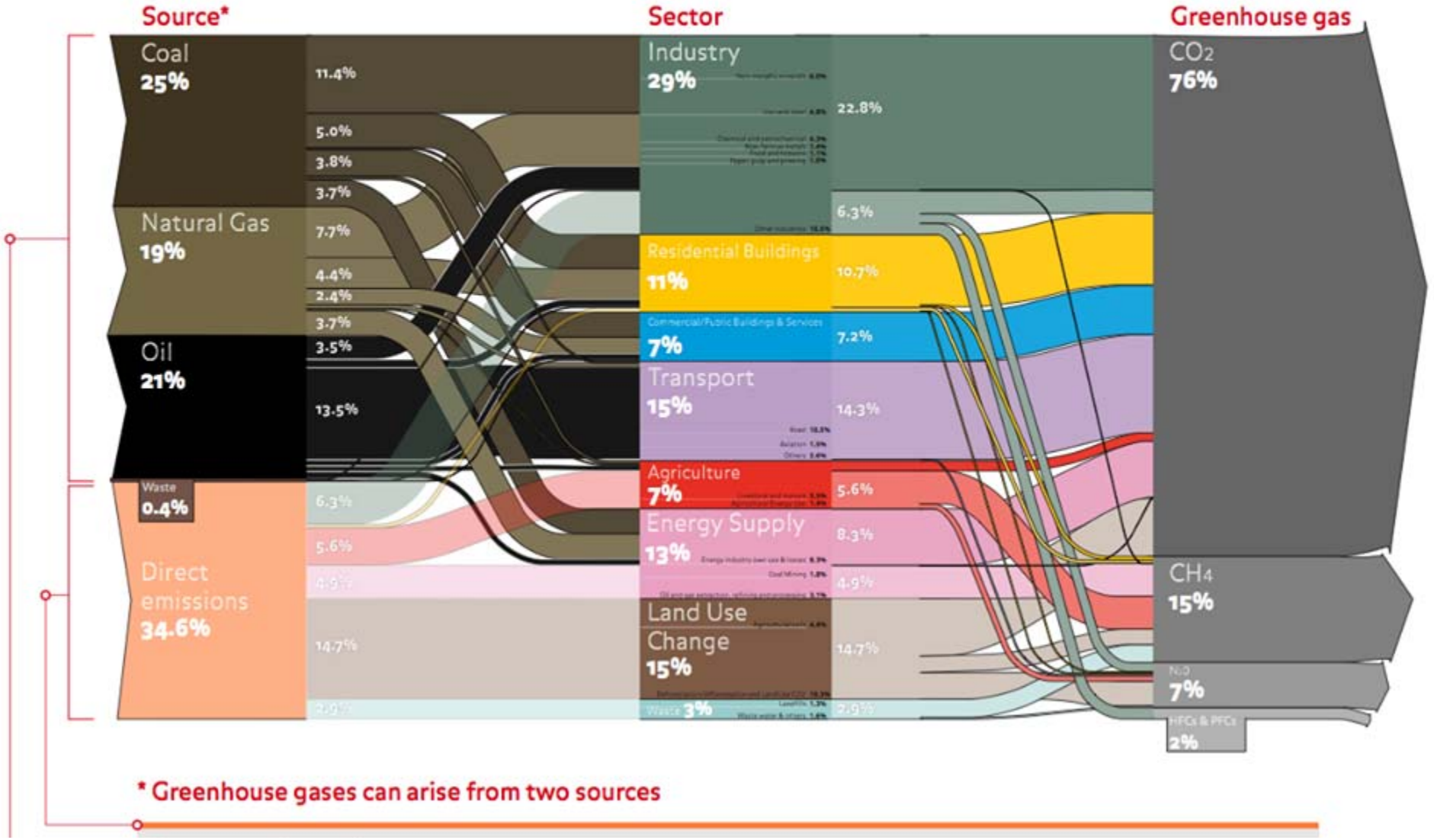


Travis County 2009 greenhouse gas emissions per sector



World GHG Emissions Flow Chart 2010

Total emission worldwide (2010)
48 629
MtCO2 eq



* Greenhouse gases can arise from two sources

Two simple things we have to do

Meet the 5 trillion dollar challenge

If we invest all $ now spend on fossil fuel exploration, mining, refining and use in renewable energy, we have 100% renewable energy within a decade

Two simple things we have to do

Do not cut down (tropical and boreal) forest

1. Stop eating meat (local organic grass-fed is OK)
2. Do not use palm oil (it is in over 95% of all products sold in convenience stores)
3. Do not sell out communities for mineral rights

It is that simple

No more investments in fossil fuel

Only investments in greenhouse gas free energy

No more deforestation

Reforestation

City resolution last week

No more investments in fossil fuel

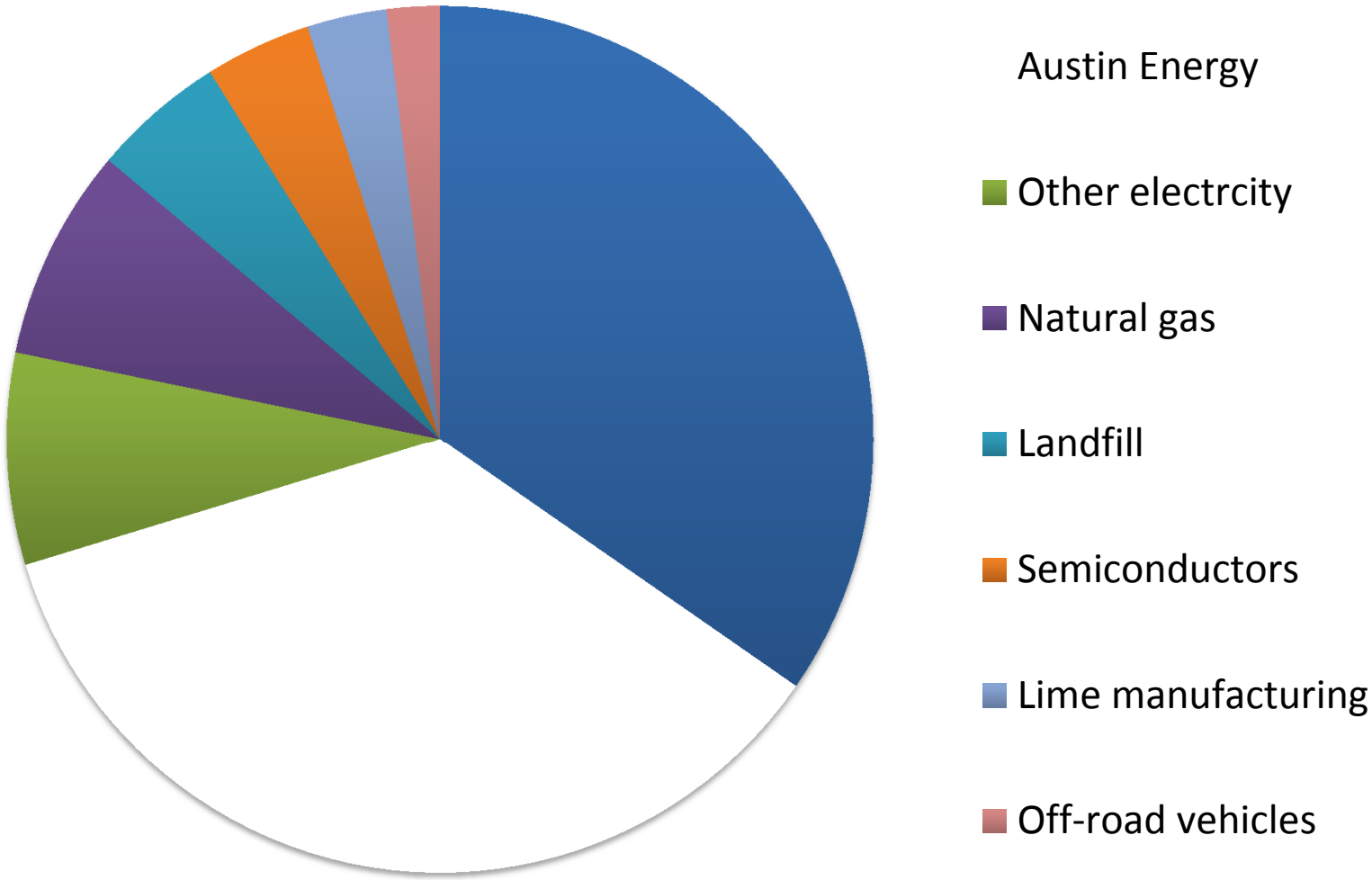
Replace Decker with utility scale solar

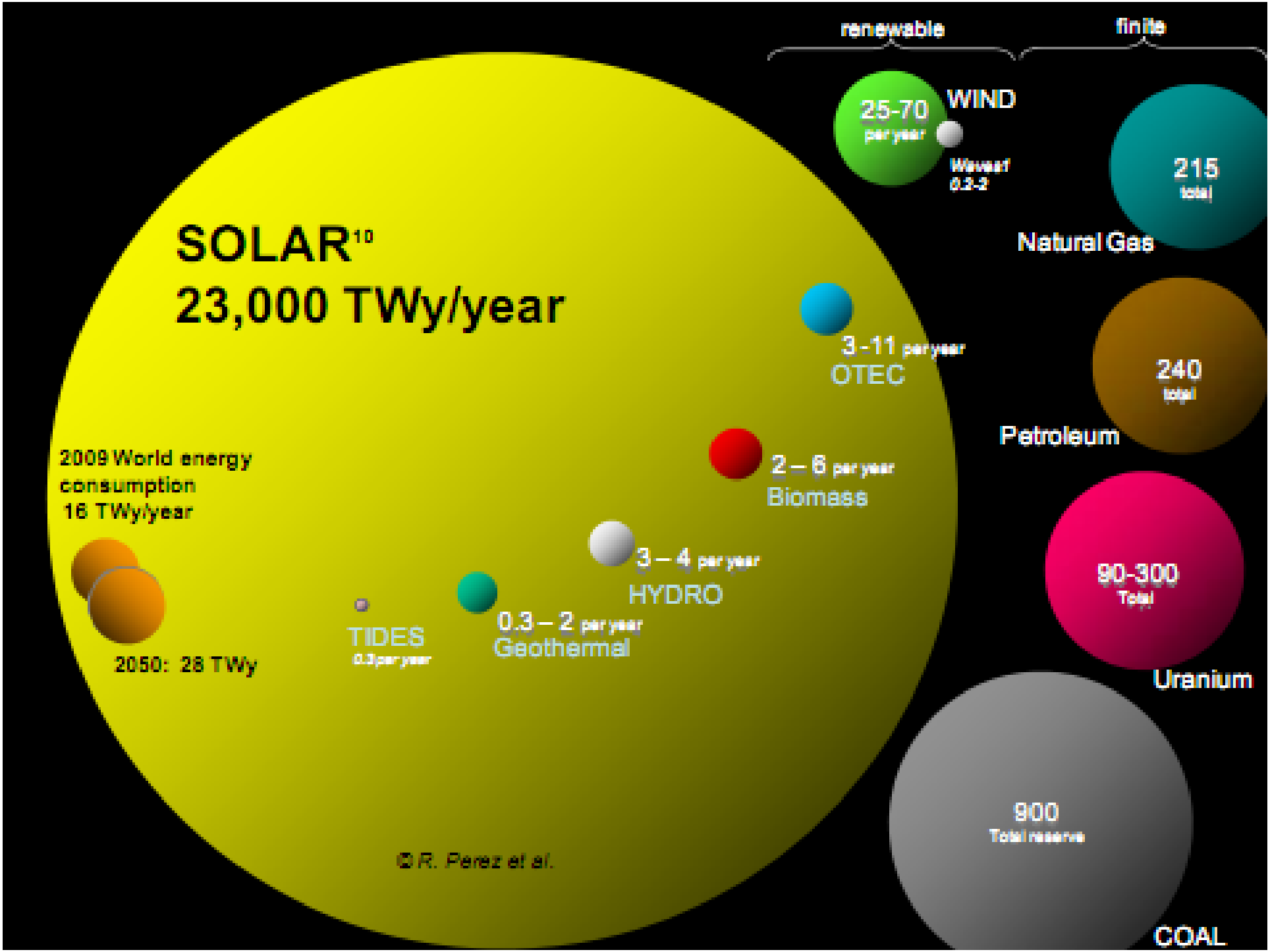
3.6 billion $ decision to not build a gas plant

2030 NET ZERO goal for Austin Energy

35% of Travis County footprint

Travis County 2009 greenhouse gas emissions per sector




renewable
finite
SOLAR[10]
23,000 TWy/year
25-70
per year
WIND
Wavesf
0.2-2
215
total
Natural Gas
3-11 per year
OTEC
240
total
Petroleum
2 – 6 per year
Biomass
2009 World energy
consumption
16 TWy/year
3 – 4 per year
HYDRO
90-300
Total
Uranium
2050: 28 TWy
TIDES
0.3per year
0.3 – 2 per year
Geothermal
900
Total reserve
COAL
© R. Perez et al.

Riley resolution implications

- Any plant that emits GHG today can not be in operations by 2030
- Any new GHG emitting plant has to fit within the ambition (in 15 years to ZERO)
- Possible escape: capture GHG (cost and performance) or offset (reliability)
  ACPP2007 says: carbon neutrality for any new carbon based generation.

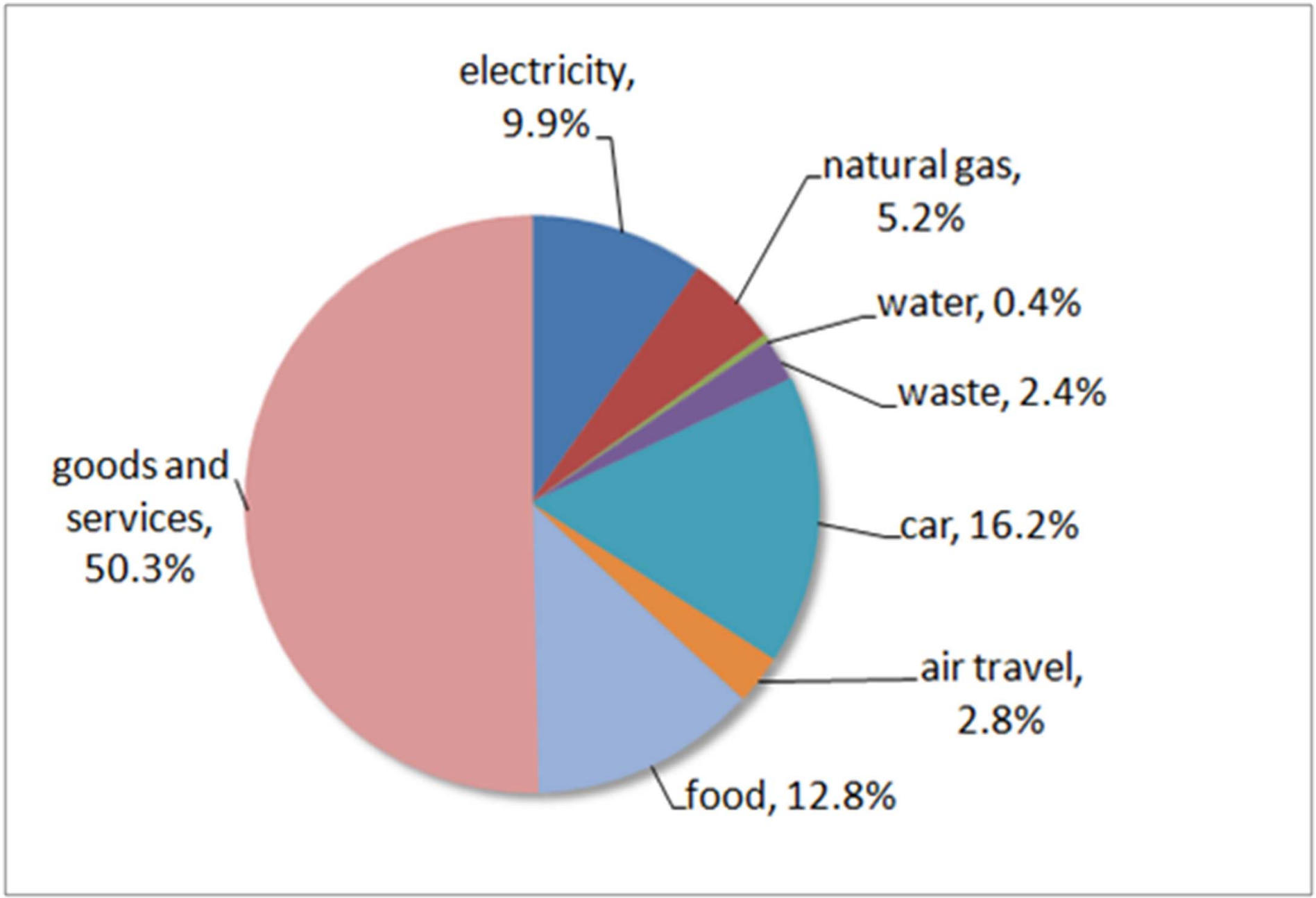
Our personal challenge

How to cut your carbon footprint to ZERO or beyond today?

Greenhouse gas emissions
Expressed in metric tons CO_2eq

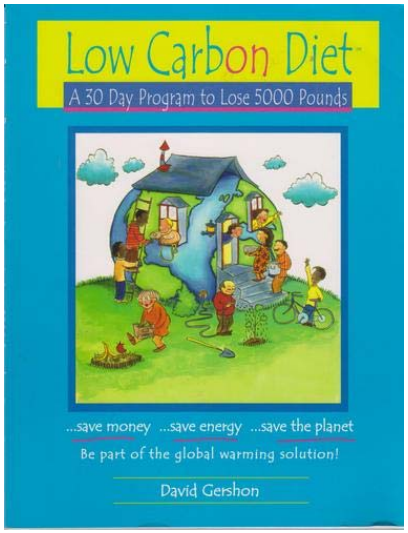
You

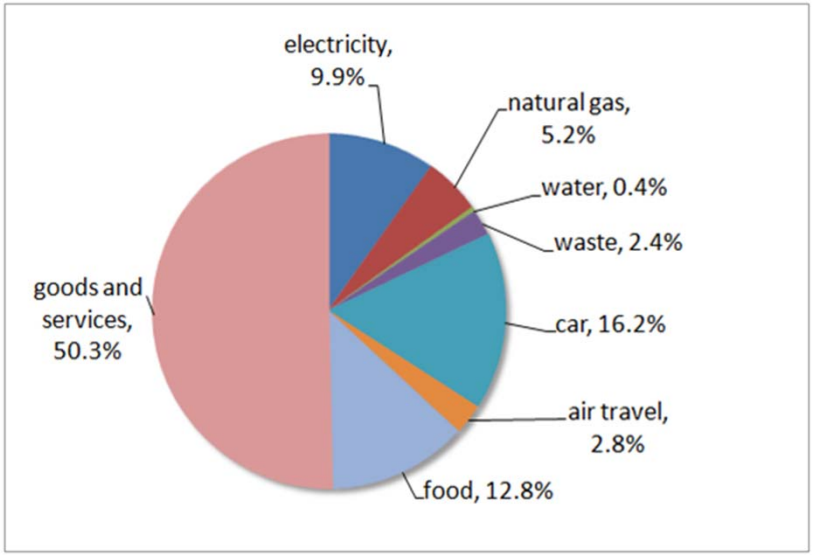
10


electricity, 9.9%
natural gas, 5.2%
water, 0.4%
waste, 2.4%
car, 16.2%
air travel, 2.8%
food, 12.8%
goods and services, 50.3%

Carbon Diet Program

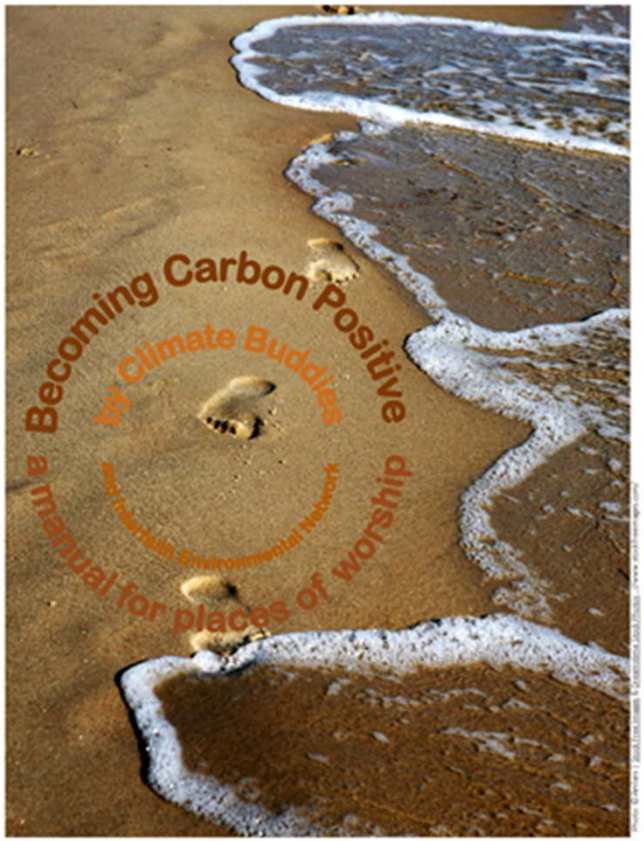
Lose 5,000 lbs of your carbon footprint in 6 weeks!





Participants speak up! Susan Adams - *When my family started the carbon diet program, we felt like we were doing pretty well and had little to learn about improving our carbon footprint. Were we wrong! We lost more than 20,000 pounds on the carbon diet and see the world through different eyes. The program outlined all kinds of simple ways to reduce our carbon footprint, while reducing our bills at the same time. The meetings were a great way to hear what actions other people were taking and to get their ideas and support.*

Interfaith Energy Action Team
Becoming Carbon Positive
– a manual for houses of worship



Faith-based members speak up during the first annual climate change preach off in 2014. Becoming Carbon Positive represents the values and actions of Austin's faith community in tackling the challenges of climate change. Clergy and church communities have joined across central Texas, forming the Interfaith Environmental Network to spur awareness and action in reducing their congregational carbon footprint in forming Green Shepherds programs. You can find out more at www.interfaithenvironment.org.

Net positive home Energy

In 2012 we became 120% self-sufficient with electricity

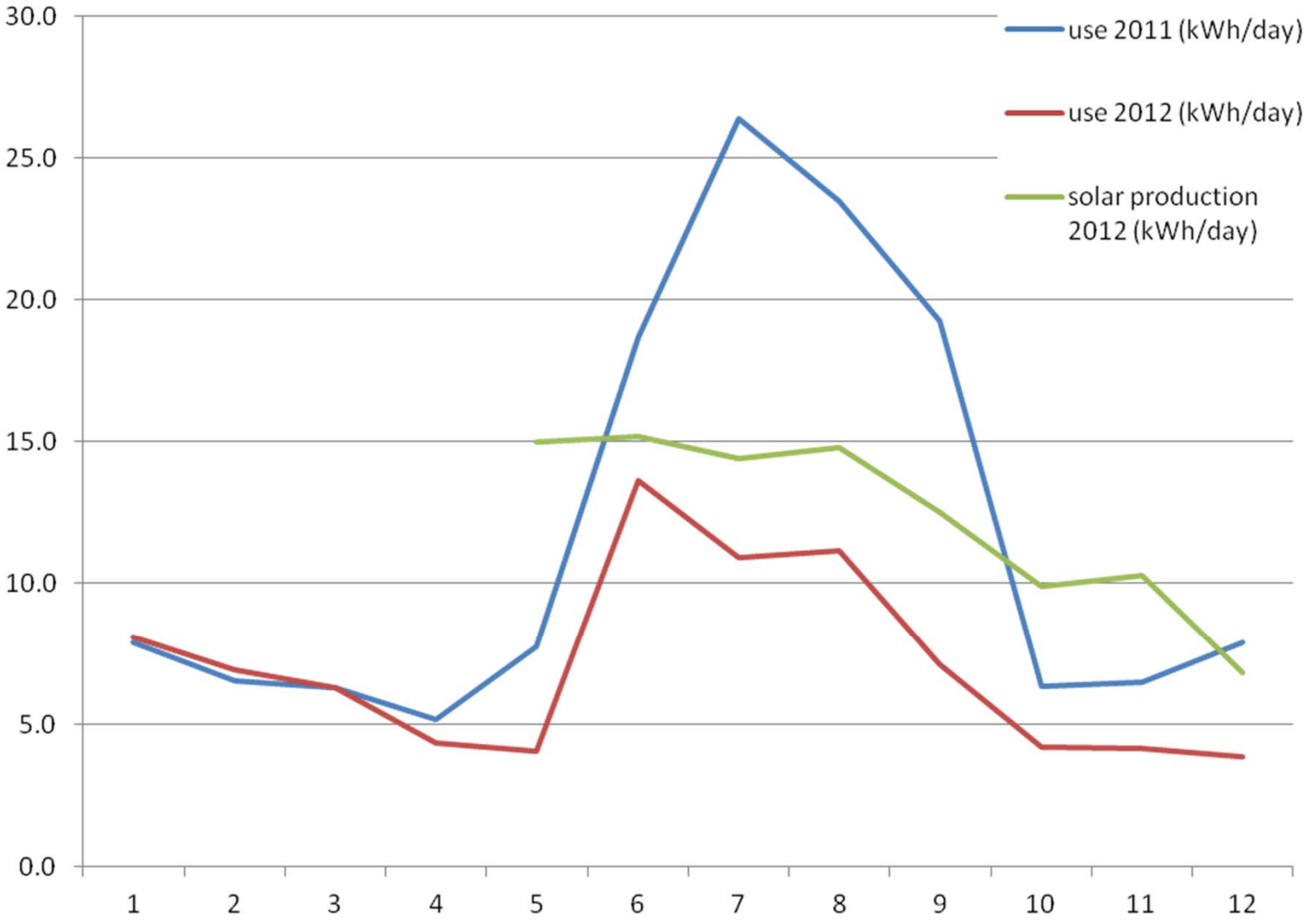
Posted by Joep in Carbon Positive | Conservation | Our Future | Victory Scenario - (Comments Off)

Last April we made the decision to invest in solar panels on our roof. We also stepped up our electricity savings efforts. And boy, did it pay off. With only 8 months of solar panel production, we have been able to make 20% more than we needed over the year so we are actually a net producer and we give back to the grid. We also curbed use by more than 40% compared to last year. We are using less energy every month as compared to last year. We are making more electricity every month than we are consuming, even over the summer in our AC-loaded Southern climate.

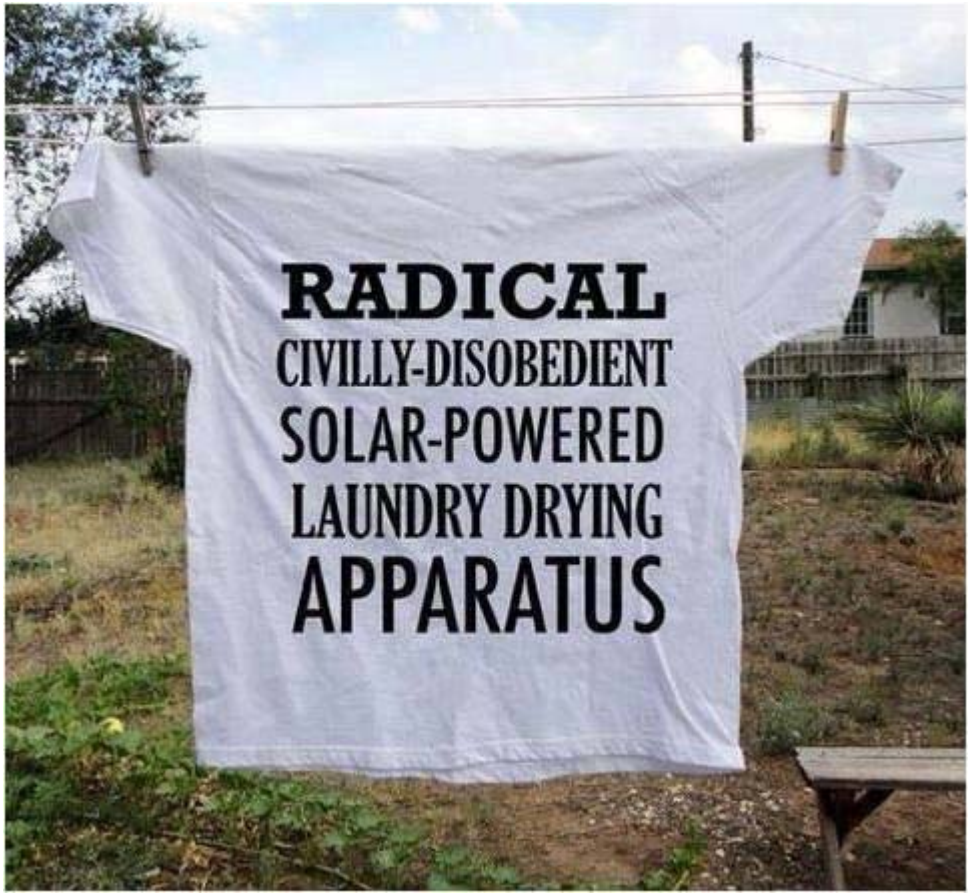
solar panels

We installed 12 solar panels that will give us over 4000 kWh of electricity per year. Thank you sun!

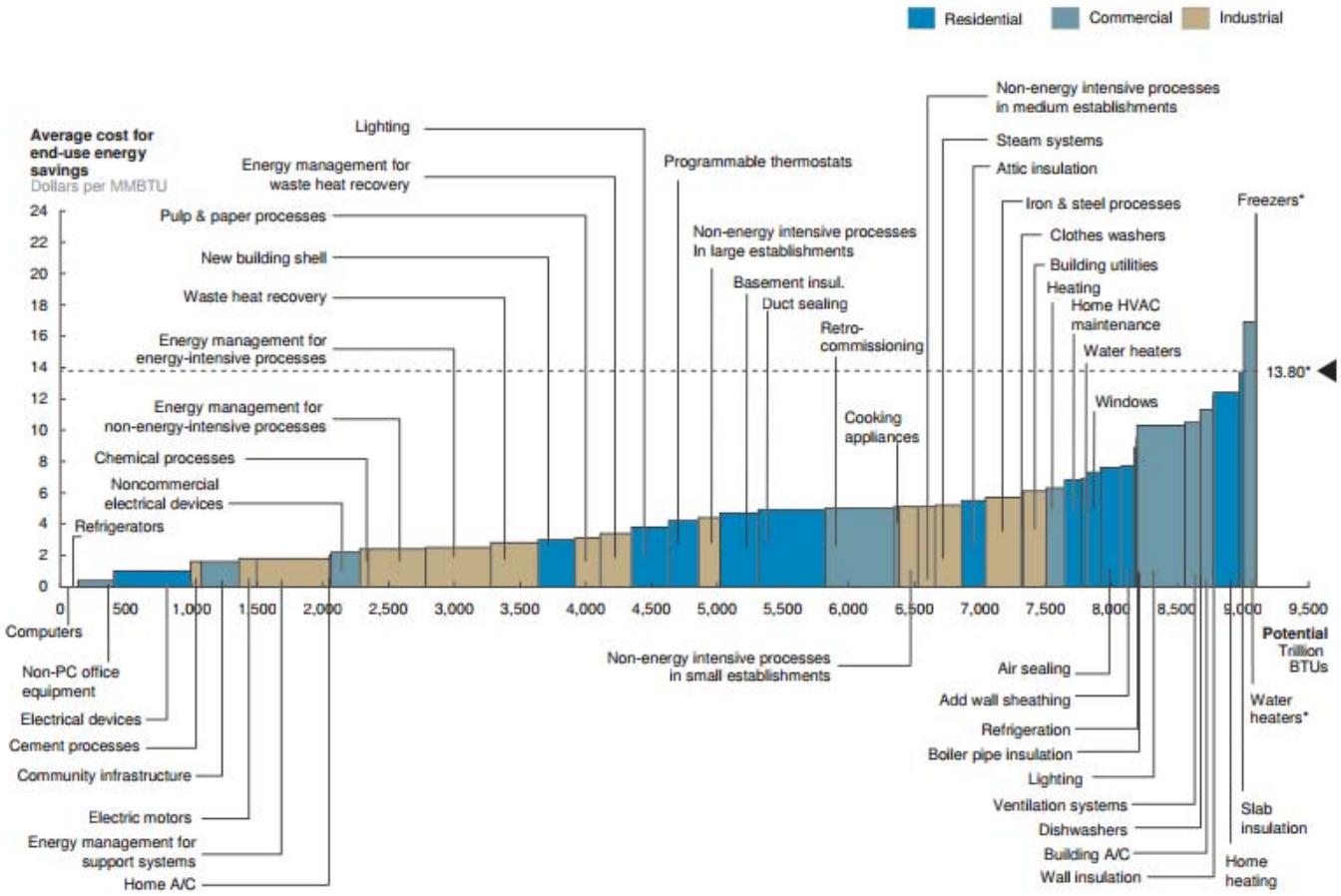
After having helped install solar panels in Europe at my father's place (see some photo's of my brother, dad and me here guiding you through all the installation steps), we decided to have them installed for us here in Austin. The main reason for this is the requirement from the city to use an approved installer to qualify for the rebates. The rebates are great, they pay for all the labor, so the work comes for free, and all work is up to code and done by certified electricians. That is a good thing. Of the remaining price tag, 30% is paid for by a federal tax incentive that you can claim on your 1040. Nice! We bought enough solar panels to match our use in 2011 which meant for us 12 solar panels of 255 watt peak each. That is less than most people in Austin would need. It generates about 4,000 kWh per year and the average household in Austin uses 11,000 kWh per year. You can see photo's of our installed grid (including some overly optimistic marketing language) on our installers website. We will earn our investment back to the last penny in about 6 years and will be making money after that every time the sun is out. We will make even more electricity next year with all 12 months of production instead of the 8 we had last year. If you want solar panels and live in the Austin area, look at this action card with a detailed step by step plan.


30.0
25.0
20.0
15.0
10.0
5.0
0.0
1
2
3
4
5
6
7
8
9
10
11
12
use 2011 (kWh/day)
use 2012 (kWh/day)
solar production 2012 (kWh/day)

Solar clothes line



EE is cheap: 30% potential



* Average price of avoided energy consumption at the industrial price; $35.60/MMBTU represents the highest regional electricity price used; new build cost based on AEO 2008 future construction costs

Source: EIA AEO 2008, McKinsey analysis

- http://www.mckinsey.com/client_service/electric_power_and_natural_gas/latest_thinking/unlocking_energy_efficiency_in_the_us_economy

Market is changing - total cost of ownership of users

- Paying a loan for NET ZERO homes with PV is cheaper than paying utility bills for the duration of a mortgage
- Third party leasing just got approved by council

We will see more and more customer owned distributed generation

Food

Bringing the climate fight to the table

Posted by Joep in Food | Victory Scenario - (Comments Off)

If you look at all the challenges facing food producers around the world, you could argue that the most daunting one is climate change. Higher temperatures, higher sea levels, crazy weather... Well, it turns out our food system isn't just challenged by climate change — it's also one of the biggest sources of greenhouse gas. Most of it comes from the production end — methane from cattle, nitrous oxide from fertilizer, CO_2 from cutting down trees — but several recent studies have concluded that we will never be truly food-secure unless we change the way we eat.

One of the biggest contributors to global warming is the food-supply system, from the fertilizer and gas used to cultivate farms to transportation and storage to what we throw away at the end of a meal. We won't stop climate change through individual action alone, but together, we can make a real difference.

Here are four simple things we can do in changing the way we consume:

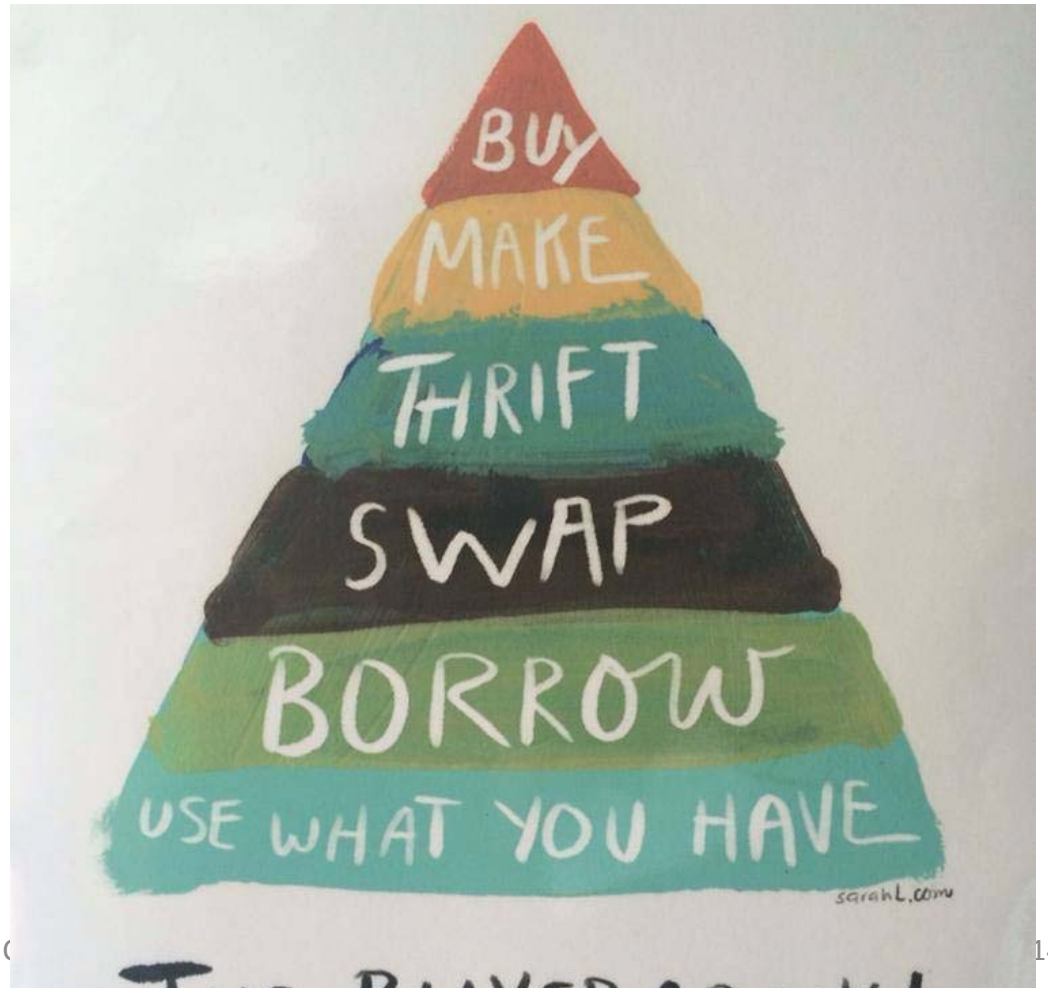
1. Eat less meat and dairy, especially beef and lamb. Livestock are by far the biggest producers of greenhouse gases in the global food system. In the U.S., most livestock-related emissions come from the animals' digestive systems and from the fertilizer used to grow their feed. If an American family of four ate no meat or cheese one day a week, it would be like taking a car off the road for five weeks a year, according to estimates by the Environmental Working Group. If we all did it, it would be like not driving 91 billion miles. If you do want to eat meat or dairy, make sure it is grass-fed or pasture raised. If you go to Whole Foods, you should talk to the people behind the meat counter and ask for #5 meat. They usually have chicken and beef in this category.

Eat a mostly plant-based, local, seasonal, preferably organic diet

1. Eat less meat and dairy, especially beef and lamb
2. Waste less food
3. Use less energy: eat fresh, local, whole foods
4. Support sustainable food systems

ZERO Waste

Solution is simple: don't buy it



ZERO Waste

savers
Good deeds. Great deals.

GOODWILL
CENTRAL TEXAS

When you buy

Buy from companies that do there part

- Many company use or generate 100% renewable energy
- Some companies apply this to their supply chain
- Some products are certified carbon neutral

Getting around

Say the carbon footprint of a combustion engine car is 1
then driving it is 5.
Making an EV is then 1.5
Driving it using solar 0.

You do the math

One solar panel will provide
enough energy to drive
1,500 miles in a Nissan LEAF

Potential of EV battery for the grid

- Peak shaving during the day
- More demand at night
- Perfect match to add more wind

1,000,000 registered cars (TRAVIS 2013)
24kWH battery (LEAF); 80% available; 19,200,000 kWh per day storage;

equals 55% of one average day of use in AE territory in 2012

10% of cars EV = 5.5% storage capacity paid for by the market

Market is changing - total cost of ownership of users

- Car payment for an electric vehicle + fuel cost is lower than driving a comparable car
- Courtney and I drive for free
  - Solar panels: no fuel cost ROI < 14 months
  - Zero down
  - Monthly payment of $200
  - Business use: miles tax deductible

We need to plan for large scale EV integration and two way charging

Direct and indirect greenhouse gas emissions Expressed in metric tons CO_2eq

Courtney and me

10

What's left

70% of carbon footprint is flying for work

Now lets go beyond ZERO

The key is: where do you put most of your money besides your house?

And I am self-employed so I direct where that money goes, well here it is….

Two simple things we have to do

Invest in renewable energy: goal to make it affordable, local, abundant and clean for everyone in the world

Our portfolio: -405 metric tons GHG per year

Home Solar PV

7 Community solar projects

2 Utility scale wind projects

5 Community wind projects

Solar for 10,000 African people

MOSAIC

MEERWIND
HAARLEMMERMEER

De Windvogel

meewind

Ecopower cvba
Posthoflei 3 bus 3
2600 Berchem
tel. 03 287 37 79
info@ecopower.be
BE-0445.389.356
Samen investeren in hernieuwbare energie

zeeuwind

SunFunder

Two simple things we have to do

Reforestation of destructed tropical forest
Restoration of existing tropical forest

Sequestration: -125 metric tons GHG per year

2000 Trees planted in Mala Atlanta
1000 Trees planting in Amazonas
15 hectares forest preservation
in Costa Rica and Peru

plant 25-100 trees every year, preferably in the rainforest

SOS Mala Atlanta

Home About Us Projects Blog

Achuar

IT IS TIME TO ACT: Help the Achuar Community & Save 1.1M Hectares of Rainforest!

Direct and indirect greenhouse gas emissions Expressed in metric tons CO_2eq

Improving the Climate

Generation (-405)

Home Solar PV

7 Community solar projects

2 Utility scale wind projects

5 Community wind projects

Solar for 10,000 African people

Use (10)

NET Positive home – 8 solar panels, < 2,000 kWh

Electric car – 12 solar panels , 12,000 miles

95% ZERO waste

75% of stuff 2nd hand

Sequestration (-125)

2000 Trees planted in Mala Atlanta

1000 Trees planting in Amazonas

15 hectares forest preservation in Costa Rica and Peru

Me + wife

-520

Equivalents

20 US households

1,121,000 people in Travis Country [2013]

So only 56,000 households have to invest their pension funds like this and plant 25 trees per year and we are good to go!

Me + wife

-520

Personal
GHG emissions and impact
Nothing we can not fix

Joep Meijer, Co-Founder Climate Buddies, Austin resident