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# Unit 1

# Energy and Daily Life

## Lead-in

From the basic needs and daily necessities in our daily life to economy and finance on a state level, we can find our heavy dependence on fossil fuels. We may be aware of the essential roles fossil fuels play as energy sources, but do we all know they are also important materials in the chemical industry? Many items in our daily life are actually made from petroleum. Can you give some examples?

Energy conservation is an important topic discussing the relationship between energy and daily life. For either economic or environmental concerns, we are supposed to save energy. An interesting finding is that the competitive nature of human beings can be employed to this end, and minute savings of each individual can make a big difference. Specifically, what can each of us do to help?

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## Learning objectives

Upon completion of this unit, you will be able to:

- talk about the impacts of fossil fuels on our daily life;
- introduce how Opower employs humans' competitive nature to reduce carbon footprints;
- employ in writing a typical academic style – formality;
- identify and write the topic sentence of a paragraph;
- describe statistics and present your ideas about reducing our carbon footprints in our daily life.

# Viewing and speaking

## Viewing



### New words

organism /'ɔ:gə,nɪz(ə)m/ *n.* 有机体; 生物  
 carboniferous /,kɑ:bə'nɪfərəs/ *a.* 石炭纪的  
 decompose /,di:kəm'pəʊz/ *v.* (使) 分解  
 zooplankton /zəʊə(ʊ)'plæŋktən/ *n.* 浮游动物  
 gaseous /'gæsiəs/ *a.* 气态的  
 density /'densəti/ *n.* 密度

cosmetics /kɒz'metɪks/ *n.* [pl.] 化妆品  
 abundant /ə'bʌndənt/ *a.* 大量的  
 allocation /,ælə'keɪʃn/ *n.* 配给; 分配  
 replenish /rɪ'plenɪʃ/ *v.* 补充  
 depletion /drɪ'pli:ʃn/ *n.* 减少; 消减  
 reserve /rɪ'zɜ:v/ *n.* 储备

**1** Watch the video clip and decide whether the statements are true (T) or false (F).

- 1 Fossil fuels were formed from the ancient plants and organisms during the age of dinosaurs.
- 2 Different types of fossil fuels formed depending on the combination of organic matter, temperature, time and pressure conditions while decomposing.
- 3 Fossil fuels are the world's dominant energy source because they are abundant and cheap.
- 4 Once fossil fuels are used up, they will never be replenished on the earth.
- 5 Fossil fuels are also the largest emitters of carbon dioxide – a greenhouse gas which causes climate change.

**2** Watch the video clip again and complete the table with what you hear.

Topics	Details and examples
Formation	Coal was formed from 1) _____ which hardened due to pressure and heat. Oil was formed from small 2) _____ like zooplankton and algae, for pressure caused the more complex organic matter to 3) _____. Natural gas was formed by the same process as oil, but only was exposed to more heat and pressure, causing it to further decompose and turn into 4) _____.
Applications	Fossil fuels have a variety of applications from 5) _____ to transport fuels. They can also be used to make a variety of common products from 6) _____, to cosmetics, to even some medicines. These resources have powered 7) _____ over history and continue to do so today.
Negative impacts	The production of fossil fuels causes both environmental and 8) _____ issues. These concerns have triggered society to look at 9) _____ resources of energy that are more environmentally 10) _____ and renewable.

## Speaking

**1** Read the short passage aloud and pay attention to the idea about cutting carbon footprints.

If you really want to cut your carbon footprint, it takes a lot more than recycling or switching to LED. Individuals must make major lifestyle changes to reduce their greenhouse gas emissions in a meaningful way, according to a recent review of emissions-reducing actions.

Fortunately, there are some super easy things you can do. Have a look at just a few of the many things you can do to make a big difference.

- Turn appliances off completely when they are not in use, including your computer.
- Print only when necessary. See something online you need to remember? Jot it down in a notebook and spare the paper.
- Adjust your thermostat, lower in winter, higher in summer.
- Bike, walk or take public transport.
- Bring your own reusable bag when you shop.
- Take fewer napkins. You don't need a handful of napkins to eat your takeout. Take just what you need.

**2** Work in pairs and answer the two questions.

1 According to a recent review of emissions-reducing actions, what should an individual do in order to cut his or her carbon footprint?

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2 Specifically, what are the super easy things you can do to help cut your carbon footprint?

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**3** Do some research on fossil fuels, a term you will find in the texts in this unit, and then prepare a one-minute oral presentation. Try to answer the following questions in your presentation.

- 1 How were fossil fuels formed?
- 2 What is the significance of fossil fuels?

## Extensive reading

### Reading text

# How Much Do Fossil Fuels Impact Our Lives?

- 1 Last Friday, the *American Statesman* published a piece titled “About 100 Protesters Call for Austin to End Fossil Fuel Use for Power”. Being from Texas, I read the piece and viewed the video attached to the story with great interest. The City of Austin – Texas’ capital city – maintains its own power utility that is separate from the power grid that provides electricity to most of the rest of the state.
- 2 The protesters were on hand to oppose a proposed plan that would increase the city’s use of renewable fuel to 65% by 2027. In a state rich in natural gas resources for power generation, this goal wasn’t aggressive enough for these 100 souls.
- 3 My first thought upon seeing the group of protesters was to wonder how many of them drove to the site of the protest in gasoline-powered cars, which make up about 99% of the automobile fleet in Texas. I wondered further if any of them understand that many of the components in the cars they drive – even Teslas – are made from petroleum-derived products.
- 4 Many in the group were wearing sneakers. I can’t help wondering if they know that those shoes are in part made from petroleum products. Some carried backpacks – do they know that parts of many such items are to some extent made from petroleum products?
- 5 It was a prosperous-looking bunch, most of whom no doubt practice sound dental hygiene. I couldn’t help wondering if they know there’s a very good chance their toothpaste – and their toothbrush, for that matter – is largely derived from petroleum. I wonder if the women among the group realize that their makeup and lipsticks are most likely derived from petroleum as well.
- 6 Many in the group were carrying the latest in cellular technology. I wonder if any of them understand that many of the components that make up their iPhones and Samsung Galaxies are derived from petroleum products. What

about the elastic that holds up their underwear, or the frames of their glasses? Do any of these protesters understand that those are derived from petroleum products? I wonder if they understand that these products cannot be replaced with windmills or solar panels.

- 7 Some in the group were consuming bottled water. I couldn't help wondering if they know how those bottles are made. Speaking of water, I wonder as well if they know that the water that comes into their homes is almost certainly pumped there by pumps powered by gasoline or natural gas. And speaking of their homes, I wonder how many of these protesters cook their meals on natural gas stoves or heat their homes and water with natural gas appliances. Do they even know where the natural gas comes from? Most Americans don't.
- 8 No doubt many of the protesters own televisions. I wonder how many of them know that a significant portion of their TVs are made from petroleum products, or that the expensive cables that produce the picture are insulated by products derived from oil, or that almost half of the electricity generated in Texas is generated by natural gas, and that that share is destined to grow as some of the old coal-fired plants in the state are retired in the coming years.
- 9 Speaking of power plants, I wonder if any of these protesters are aware of the fact that the United States today has reduced its carbon emissions to levels not seen since 1994, and that our country far and away leads the globe in reduction of greenhouse gases, without being a participant in the Paris Accord or in any other global emissions agreement. I wonder if any of them understand that the main reason for this is because, over the last decade, we have replaced a large number of coal-burning power plants with natural gas capacity.
- 10 I noticed that many of the protesters were young people, some no doubt students at the University of Texas. I wonder how many of those young folks are aware of the fact that the Permanent University Fund that heavily subsidizes their tuition and fees, and has largely paid for those wonderful buildings on campus, is funded almost solely by revenues from oil and natural gas produced in the Permian Basin of West Texas. I wonder how many of them understand that their state's Rainy Day Fund, which today contains upward of \$10 billion, is financed almost solely by the severance tax on oil and natural gas.
- 11 I wondered if any of them understand that, without the fossil fuels they demonized at Austin's city hall on Friday, they'd be paying a lot more in taxes than they do today. None of the reporters present thought to ask any of these questions, so the answers will remain forever unknown.
- 12 Far be it from me to want to disillusion idealistic young people, but I do wish someone would at least educate them. The older people in that group don't even have that excuse.

## Culture notes

**Tesla:** Tesla Inc. is an American automaker, energy storage company, and solar panel manufacturer based in Palo Alto, California. Founded in 2003, the company specializes in electric cars, energy storage and residential photovoltaic panels.

**Paris Accord:** It is also known as Paris Climate Agreement. Signed in 2016, Paris Accord is an agreement dealing with greenhouse gas emissions mitigation, adaptation and finance. It aims to respond to the global climate change threat by keeping a global temperature rise this century well below two degrees Celsius (°C) above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C.

## Vocabulary

fossil /'fɒsl/ *n.* 化石

impact /ɪm'pækt/ *v.* 对...有作用(影响)

maintain /meɪn'teɪn/ *v.* 维持; 保持

utility /ju:'tɪləti/ *n.* (煤气、水、电等的) 公共服务, 公用事业

grid /grɪd/ *n.* 输电网

renewable /rɪ'nju:əbl/ *a.* (能源等) 可再生的

protest /'prəʊtest/ *n.* 抗议

gasoline /'gæsə,li:n/ *n.* 汽油

automobile /'ɔ:təmə,bi:l/ *n.* 汽车

fleet /fli:t/ *n.* 车队

petroleum /pə'trəʊliəm/ *n.* 石油

derive /dɪ'reɪv/ *v.* 源自

prosperous /'prɒsp(ə)rəs/ *a.* 成功的

dental /'dentl/ *a.* 牙齿的

hygiene /'haɪdʒi:n/ *n.* 卫生

makeup /'meɪkʌp/ *n.* 化妆品

lipstick /'lɪp,stɪk/ *n.* 口红; 唇膏

cellular /'seljələ/ *a.* 移动电话的

elastic /ɪ'læstɪk/ *n.* 松紧带

frame /freɪm/ *n.* 眼镜框

windmill /'wɪnd,mɪl/ *n.* 风车

panel /'pænl/ *n.* 面板

appliance /ə'plaiəns/ *n.* 家用器具

portion /'pɔ:ʃn/ *n.* 一部分

cable /'keɪbl/ *n.* 电缆

insulate /'ɪnsju,leɪt/ *v.* 使绝缘

destined /'destɪnd/ *a.* 注定的; 肯定的

emission /ɪ'mɪʃn/ *n.* 散发; 排放

greenhouse /'grɪn,haʊs/ *n.* 温室

participant /pɑ:'tɪsɪpənt/ *n.* 参与者

global /'gləʊbl/ *a.* 全球的

capacity /kə'pæsəti/ *n.* 产量

subsidize /'sʌbsɪdaɪz/ *v.* 给予...津贴(补贴)

tuition /tju:'ɪʃn/ *n.* 学费

campus /'kæmpəs/ *n.* 校园

solely /'səʊli/ *ad.* 唯一地; 仅仅

revenue /'revə,nju:/ *n.* (政府的) 税收, 收入

upward /'ʌpwəd/ *ad.* (数量、时间等) ... 以上

severance tax 开采税

demonize /'di:mə,naɪz/ *v.* 魔鬼化; 丑化

disillusion /,dɪs'lu:ʒn/ *v.* 使(某人)希望(理想、幻想等)破灭

idealistic /aɪ,dɪə'lɪstɪk/ *a.* 理想主义的; 空想的

## Integrated exercises

**1** Match each of the following statements with the paragraph from which the information is derived. You may choose a paragraph more than once.

- \_\_\_\_\_ 1 Sneakers and backpacks are partially made from petroleum products.
- \_\_\_\_\_ 2 Makeup and lipsticks are usually derived from petroleum.
- \_\_\_\_\_ 3 Revenues from fossil fuels have played a significant role in financing higher education in Texas.
- \_\_\_\_\_ 4 Texas has replaced many coal-burning power plants with those fueled by natural gas over the last decade.
- \_\_\_\_\_ 5 Owing to fossil fuels, Austinites pay fewer taxes than they would otherwise.
- \_\_\_\_\_ 6 Almost half of the electricity of Texas is generated by natural gas today.
- \_\_\_\_\_ 7 Carbon emissions of the US have reached its lowest level since 1994.
- \_\_\_\_\_ 8 Many phone components are derived from petroleum products.
- \_\_\_\_\_ 9 The City of Austin has its own independent power utility.
- \_\_\_\_\_ 10 The reason for the gathering of the group of protesters is that they consider the proposed plan to increase the city's use of renewable fuel not aggressive enough.

**2** Complete the following table to check your understanding of the major points and structure of the text.

Introduction (Paras. 1-2)	A protest was staged because the protesters deemed the proposed plan to increase Austin's use of renewable fuel to 65% by 2027 not 1) _____.
Body (Paras. 3-11)	<p>There are many examples showing our heavy reliance on fossil fuels. The impacts of fossil fuels can be found in three aspects:</p> <ul style="list-style-type: none"> <li>• Many daily items are made from petroleum: Examples: 2) _____</li> <li>• Many appliances, vehicles, household and public facilities are powered by fossil fuels: Examples: 3) _____</li> <li>• Education and social welfare are heavily dependant on revenues from oil and natural gas and the severance tax: Examples: 4) _____</li> </ul>
Conclusion (Para. 12)	The protesters demonized fossil fuels because they fail to realize 5) _____, hence it is necessary for people, especially the young, to be educated on 6) _____.



**3** Work in pairs and take turns giving an example to demonstrate the impacts of fossil fuels on our daily life. You can cite examples from the text, or use those from your own experience. Take notes of the examples and their impacts while you do this task.

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**4** Translate the phrases into Chinese.

- |                           |                                |
|---------------------------|--------------------------------|
| 1 power utility _____     | 14 be destined to _____        |
| 2 power grid _____        | 15 carbon emission _____       |
| 3 proposed plan _____     | 16 far and away _____          |
| 4 renewable fuel _____    | 17 far be it from me _____     |
| 5 power generation _____  | 18 severance tax _____         |
| 6 in part _____           | 19 automobile fleet _____      |
| 7 to some extent _____    | 20 gasoline-powered car _____  |
| 8 dental hygiene _____    | 21 cellular technology _____   |
| 9 for that matter _____   | 22 can't help wondering _____  |
| 10 be derived from _____  | 23 upward of _____             |
| 11 hold up _____          | 24 speaking of _____           |
| 12 frame of glasses _____ | 25 natural gas appliance _____ |
| 13 solar panel _____      | 26 natural gas stove _____     |

**5** Complete the sentences by translating the Chinese given in brackets into English. Refer to the phrases listed above when necessary.

- 1 She is \_\_\_\_\_ (最为优秀的女演员) in the country.
- 2 \_\_\_\_\_ (我绝不想) to interfere in your work, but isn't this rather an impractical idea?
- 3 She \_\_\_\_\_ (从拉小提琴中获得极大的乐趣).
- 4 The loss is estimated to reach \_\_\_\_\_ (30,000 元以上).
- 5 They were \_\_\_\_\_ (注定再也不能相见).
- 6 The deadline for applications is being extended, \_\_\_\_\_ (部分原因是邮局职员罢工).
- 7 Your mother would never allow it, and \_\_\_\_\_ (而且我也不会).
- 8 \_\_\_\_\_ (说到钱的事), have we paid our credit card bills yet?

# Intensive reading

## Warming up

What are carbon footprints? What contributes to our carbon footprints? Completing the following passage may help clarify these questions.

A carbon footprint is the amount of greenhouse gas emissions produced, either directly or indirectly, through 1) \_\_\_\_\_ (日常活动). These greenhouse gases are usually measured in metric tons of carbon dioxide, or CO<sub>2</sub>. A carbon footprint can be measured for a(n) 2) \_\_\_\_\_ (个人), a household, a company or other group of people, or a state or nation. It is a small yet vital part of our larger 3) \_\_\_\_\_ (生态足迹).

According to some experts, there are two types of carbon footprints. These are the primary footprint and the secondary footprint. The primary footprint refers to the activities we do that burn 4) \_\_\_\_\_ (化石燃料) directly, or immediately affect the 5) \_\_\_\_\_ (自然资源) on the planet, such as driving a car, taking a flight in an airplane, heating our homes, plugging in a(n) 6) \_\_\_\_\_ (电子设备), or using water. Secondary activities that affect the carbon footprint mostly refer to products we purchase, such as food and clothing or other products for our homes. The 7) \_\_\_\_\_ (过程) of manufacturing the items, transporting the products to our locations, and, after we have finished using the items, the amount of time it takes for the materials to break down and degrade all affect our carbon footprints. Even if you do not separate your activities into primary and secondary categories, they are all important and they all affect 8) \_\_\_\_\_ (环境).

## Reading text

- 1 One way of thinking about how to approach climate change is to drive “wedges” into the issue. One wedge would be to increase renewable energy production, another would be to increase energy efficiency in the electric grid, and a third, to make buildings more energy efficient. Along with these other improvements, changing human behavior is another, very important wedge.
- 2 Two families that are demographically similar, living side by side, in similar apartments, can use dramatically different amounts of energy – the difference of which can be attributed to behavioral differences.

### Keeping up with the neighbors

- 3 These behavioral differences were demonstrated in a famous psychology experiment that focused on home energy use. The research team, led by two psychologists, Robert Cialdini of Arizona State University and Wesley Schultz of California State University, San Marcos, hung a series of five door hangers with energy-saving messages on several hundred homes in a San Diego suburb in 2004. One hanger encouraged people to “join their neighbors” in conserving energy, one appealed to their self-interest to save money, another called on them to save energy to protect

# How Competitive Natures Help Reduce Carbon Footprints

the environment, and a fourth asked them to conserve energy for future generations and the benefit of society. A fifth and final message simply stated that summer is here and it's a time to save energy with no underlying reason.

- 4 The researchers measured the effectiveness of the messages by obtaining meter readings before and after the door hangers were distributed. They found that the last four had minimal effect. But the first, which mentioned the neighbors, produced a significant 10% reduction in home energy usage.

## Opower to the rescue

- 5 Inspired by the findings, Harvard graduates Alex Laskey and Dan Yates launched Opower, a US-based energy software company, eventually bringing on Robert Cialdini himself to act as chief scientist to help with what the company calls the largest behavioral study ever.
- 6 Opower crunches data from their service areas and compares the energy consumption of each residential customer with that of 100 others in nearby houses or apartments of similar size. Based on their data, they include the comparisons with each customer's monthly bill, and many customers can also access the information more frequently

through their online profiles. The company also sometimes calls residents prior to heat spells to ask if they would reduce their air conditioning use the following day. They do not offer customers monetary incentives to cut back – just the satisfaction of beating the neighbors at something.

- 7 Earlier this month, Richard Caperton, Director of National Policy and Partnerships at Opower, visited the World Bank to provide an overview of the communication strategies the company utilizes.
- 8 He stated that “people look to their utility for information, and based on extensive customer surveys, they actually want to hear from their utility more.” He said that most people receive around 40 pieces of content each year from their utility but that 75% of those polled would like more frequent contact – when they move, when a change of weather might prompt different energy consumption behaviors, before they receive an unusually high bill, whenever there is a rate change, etc. He continued that “even in places where a utility has low levels of trust, people still prefer dealing with them rather than a third party.”
- 9 The company now has over 95 utilities as customers, 40 million ratepayers in its database, and it experiments on as many as one million customers at a time in five

different countries. It has learned that adding smiley faces to the reports of customers who use energy efficiently helps keep them on track. It has also learned from mistakes: Telling good customers that they were more efficient than their neighbors backfired, because many saw it as an excuse to be more wasteful.

- 10 Opower's work has helped residential customers in Vermont and Southern California reduce their home energy use by 1.5%-3.5%. At 5 p.m. on the hottest of those days in Glendale, California, the reductions topped 5%. That's comparable with the average savings the company experienced in its first municipal pilot program in Baltimore in which customers were essentially paid to turn down their ACs during peak times.
- 11 During his visit, Caperton also shared four key elements to messaging on energy use: The message must be technology-neutral; the intervention must be cost-effective; there must be measurable savings that can be verified; and the benefits must be shared broadly. Taken together, it's clear that any communication on energy use must be easy to understand, not too expensive or difficult to implement, and the benefits must be both scalable and equitable.
- 12 Messages that destroy myths – such as the false claim that if you turn down the thermostat at night it will take even more energy to cool it down or heat it up in the morning – can be effective because they do not require much

background information or drastic changes in behavior to implement.

- 13 Messages that address our “status quo bias”, also referred to as “defaults”, can also be effective if they are cost-effective and the benefits are realized easily. It takes much more effort to adopt a new option or behavior, like buying or installing a more energy-efficient appliance, than to maintain current behavior. Thus, any time a new energy-saving program requiring human participation is initiated, it should take account of the fact that for every additional step an individual must go through – getting a home energy audit, qualifying for financing, and so on – the participation level goes down.

### Conclusion

- 14 The benefits to this kind of intervention are clear: One study from 2009, published in the *Proceedings of the National Academy of Sciences* of the US, suggested that American households – which account for around 38% of US carbon emissions – could save 20% of household direct emissions or 7.4% of US national emissions, with little or no reduction in household well-being by changing which household appliances and objects they use, and how they use them. That's greater than the total emissions of the country of France! With this in mind, behavior change may turn out to be the most powerful wedge of all. It can reduce energy consumption by adding up the minute savings of individuals to a massive scale.

### Culture notes

**National Academy of Sciences:** It is a US private, nonprofit organization of distinguished scholars. Established in 1863, it is charged with providing independent, objective advice to the nation on matters related to science and technology. Its new members are elected annually by current members, based on their distinguished and continuing achievements in original research. Election to the membership in it is considered one of the highest honors that a scientist can receive.

## Vocabulary

footprint /'fʊt,prɪnt/ *n.* 脚印; 足迹

wedge /wedʒ/ *n.* 楔子

efficient /'ɪfɪʃnt/ *a.* 效率高的

demographically /,demə'græfɪkli/ *ad.* 人口地; 人口统计地

dramatically /drə'mætrɪkli/ *ad.* 惊人地

attribute sth. to sb. / sth. 把...归因于

demonstrate /'demən,streɪt/ *v.* 证明; 证实

psychologist /saɪ'kɒlədʒɪst/ *n.* 心理学家

series /'sɪəri:z/ *n.* 系列

hanger /'hæŋə/ *n.* 挂钩

suburb /'sʌbɜ:b/ *n.* 城郊; 近郊

conserve /kən'sɜ:v/ *v.* 节省; 节约

underlying /,ʌndə'laɪɪŋ/ *a.* 根本的; 内在的

minimal /'mɪnɪml/ *a.* 极小的; 极少的

finding /'faɪndɪŋ/ *n.* (调查、研究的) 结果

launch /lɔ:ntʃ/ *v.* 创办 (企业)

crunch /krʌntʃ/ *v.* 处理 (信息)

consumption /kən'sʌmpʃn/ *n.* (油、电等能源的) 消耗量

residential /,rezɪ'denʃl/ *a.* 居民的

comparison /kəm'pærɪsn/ *n.* 比较; 比较报告 (结论)

profile /'prəʊfaɪl/ *n.* 简介; 概况

resident /'rezɪd(ə)nt/ *n.* 居民

prior /'praɪə/ *a.* 先前的; 之前的

monetary /'mɒnɪt(ə)ri/ *a.* 货币的; 金钱的

incentive /ɪn'sentɪv/ *n.* 刺激; 奖励

partnership /'pɑ:tnəʃɪp/ *n.* 合伙关系; 合作关系

overview /'əʊvə,vju:/ *n.* 概述; 概要

strategy /'strætədʒi/ *n.* 策略

utilize /'ju:tɪ,ləɪz/ *v.* 利用

extensive /ɪk'stensɪv/ *a.* 广泛的; 全面的

poll /pɔ:l/ *v.* 对...进行民意调查

prompt /prɒmpt/ *v.* 导致; 促使

ratepayer /'reɪt,peɪə/ *n.* 公共设施的用户  
backfire /,bæk'faɪə/ *v.* (计划或行动) 发生意外, 产生事与愿违的结果

comparable /'kɒmp(ə)rəbl/ *a.* 类似的; 不相上下的

municipal /mju:'nɪsɪpl/ *a.* 市的; 市政的

essentially /ɪ'senʃli/ *ad.* 大体上; 基本上

peak /pi:k/ *a.* (时间、阶段) 高峰的

intervention /,ɪntə'venʃn/ *n.* 干涉; 干预

measurable /'meɪz(ə)rəbl/ *a.* 可测量的; 明显的; 重要的

verify /'veri,fai/ *v.* 查证; 核实

implement /'ɪmplɪ,ment/ *v.* 贯彻; 实施

scalable /'skeɪləbl/ *a.* 可扩展的

equitable /'ekwɪtəbl/ *a.* 公平合理的

myth /mɪθ/ *n.* 错误的观点; 不真实的事

thermostat /'θɜ:məʊ,stæt/ *n.* 温度调节器; 恒温器

drastic /'dræstɪk/ *a.* (动作或变化) 猛烈的, 力度大的

bias /'bi:əs/ *n.* 偏见; 成见

default /dɪ'fɔ:lt/ *n.* 默认值; 缺省值

option /'ɒpʃn/ *n.* 选择

current /'kʌrənt/ *a.* 当前的; 现时的

initiate /ɪ'nɪʃi,et/ *v.* 开始实施; 发起

individual /,ɪndɪ'vɪdʒʊəl/ *n.* 个人; 个体

audit /'ɔ:ɪt/ *n.* 检查; 审计

qualify /'kwɒlɪ,fai/ *v.* (使) 有资格

proceedings /prə'si:diŋz/ *n.* [pl.] 会议记录

household /'haʊs,həʊld/ *n.* 家庭

*a.* 家庭的; 家用的

well-being /,wel 'bi:ɪŋ/ *n.* 幸福; 舒适

massive /'mæsɪv/ *a.* 大量的; 巨大的

## Text understanding

**1** Answer the following questions as you read through the text.

1 Read Paras. 1-2. What are the “wedges” into the issue of climate change?

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_

2 Read Paras. 3-4. In a famous psychology experiment a series of five door hangers with different messages were hung on several hundred homes. What were the messages? Try to write the messages that appeared on the door hangers.

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

**2** Complete the following table to check your understanding of the major points and structure of the text.

Introduction (Paras. 1-2)	One of the very important wedges in coping with climate change is 1) _____, as behavioral differences may lead to 2) _____.
Body (Paras. 3-13)	Opower comes to the rescue by tapping into human beings’ competitive nature and it utilizes various communication strategies to change people’s energy consumption behavior. <ul style="list-style-type: none"><li>• They include the comparisons of energy consumption with neighbors in customers’ 3) _____ and provide access to the information through their 4) _____.</li><li>• People look to their utility for information, and based on customer surveys, they actually want to hear more from their utility. Moreover, most people would like 5) _____ with their utility.</li><li>• Adding 6) _____ to the reports of customers who use energy efficiently helps keep them on track; whereas telling good customers that 7) _____ could backfire.</li><li>• Four key elements to 8) _____ should be noted.</li><li>• Messages that 9) _____ can be effective.</li><li>• Messages that 10) _____ can also be effective if they are cost-effective and the benefits are realized easily.</li></ul>
Conclusion (Para. 14)	Behavior change may be 11) _____. It can reduce energy consumption by 12) _____.

## Language building

**1** Match each of the words in the left column with its corresponding meaning in the right column.

_____	1 ratepayer	a to deal with large amounts of data very quickly
_____	2 profile	b an important service provided for the public such as water, electricity, or gas
_____	3 crunch	c a customer of a public utility
_____	4 utility	d severe or radical in nature
_____	5 series	e a description of a person, group or organization, containing most important facts
_____	6 initiate	f characterized by maximum activity or demand
_____	7 drastic	g an official inspection of an organization's accounts
_____	8 comparable	h to cause (a process or action) to begin
_____	9 peak	i a number of similar events or things, one following another
_____	10 audit	j similar or equivalent

**2** Among the three choices given, choose the one that is **NOT** close in meaning to the underlined word in each sentence.

- One way of thinking about how to approach climate change is to drive “wedges” into the issue.  
A) deal with                      B) handle                      C) come near to
- These behavioral differences were demonstrated in a famous psychology experiment that focused on home energy use.  
A) shown                      B) proved                      C) supported
- Alex Laskey and Dan Yates launched Opower, a US-based energy software company.  
A) established                      B) started                      C) proposed
- Many customers can also access the information more frequently through their online profiles.  
A) shadow                      B) information                      C) sketches
- They do not offer customers monetary incentives to cut back.  
A) motivators                      B) stimuli                      C) revenues
- Based on extensive customer surveys, they actually want to hear from their utility more.  
A) large-scale                      B) broad                      C) permanent
- There must be measurable savings that can be verified.  
A) confirmed                      B) disillusioned                      C) validated
- They do not require much background information or drastic changes in behavior to implement.  
A) carry out                      B) publicize                      C) perform

- 9 It takes much more effort to adopt a new option or behavior, like buying or installing a more energy-efficient appliance, than to maintain current behavior.  
A) putting in place      B) putting up with      C) setting up
- 10 It can reduce energy consumption by adding up the minute savings of individuals to a massive scale.  
A) immense      B) elastic      C) enormous

**3** Complete each of the following sentences with an appropriate word from the given word family. Change the form where necessary.

- 1 Streamlining cars increases their fuel \_\_\_\_\_. (efficient, efficiency, inefficiency, efficiently)
- 2 New machinery has enhanced the company's productivity and \_\_\_\_\_. (compete, competition, competitor, competitive, competitiveness)
- 3 A dipstick is used to \_\_\_\_\_ how much oil is left in an engine. (measure, measurement, measurable, immeasurable)
- 4 You must satisfy the \_\_\_\_\_ qualifications to get a work permit. (resident, residential, residence)
- 5 The growth of tourism brought \_\_\_\_\_ to the island. (prosper, prosperity, prosperous, prosperously)
- 6 The \_\_\_\_\_ media refers to the various ways, especially television, radio, newspapers, and magazines, by which information and news are given to large numbers of people. (mass, massive, massively, massiveness)
- 7 According to \_\_\_\_\_ Martin Lloyd-Elliott, 90% of communication between people is non-verbal. (psychology, psychological, psychologically, psychologist)
- 8 They made a(n) \_\_\_\_\_ of different countries' eating habits. (compare, comparison, comparable, incomparable)
- 9 For two decades the country has been ravaged by foreign \_\_\_\_\_. (intervene, intervener, intervention, interventional)
- 10 The new rules will become \_\_\_\_\_ in the next few days. (effect, effective, effectiveness)

**4** Match each word in the box with the group of phrases where it is usually found.

current	drastic	monetary	implement	minute	household
1 _____				2 _____	
~ a new plan				~ appliances	
~ a program of reforms				~ chores	
~ one's idea				~ goods	
~ a policy				~ expenses	



3 \_\_\_\_\_  
~ control  
~ policy  
a ~ system  
the ~ unit

4 \_\_\_\_\_  
~ savings  
a ~ quantity  
a ~ chance  
~ differences

5 \_\_\_\_\_  
~ behaviors  
the ~ government  
~ events  
no longer in ~ use

6 \_\_\_\_\_  
~ changes  
~ measures  
to take ~ action  
a ~ shortage of food

**5** Find the idiomatic expressions in the text matching the Chinese equivalents.

- |                |               |
|----------------|---------------|
| 1 碳足迹 _____    | 15 错误说法 _____ |
| 2 可再生能源 _____  | 16 传播策略 _____ |
| 3 能源效率 _____   | 17 现状 _____   |
| 4 节约能源 _____   | 18 考虑 _____   |
| 5 电表读数 _____   | 19 参与程度 _____ |
| 6 首席科学家 _____  | 20 碳排放 _____  |
| 7 住宅用户 _____   | 21 家用电器 _____ |
| 8 网上档案资料 _____ | 22 比邻而居 _____ |
| 9 金钱鼓励 _____   | 23 行为差异 _____ |
| 10 削减 _____    | 24 月度账单 _____ |
| 11 价格变化 _____  | 25 第三方 _____  |
| 12 与……相当 _____ | 26 背景信息 _____ |
| 13 试验性项目 _____ | 27 经历 _____   |
| 14 高峰时段 _____  | 28 下降 _____   |

**6** Combine the sentences given below. Then compare your sentences with the original ones in the text.

1 \_\_\_\_\_  
\_\_\_\_\_

- a These behavioral differences were demonstrated in a famous psychology experiment.
- b The famous psychology experiment focused on home energy use.

2 \_\_\_\_\_  
\_\_\_\_\_

- a Alex Laskey and Dan Yates were inspired by the findings.
- b Alex Laskey and Dan Yates launched Opower.
- c Opower is a US-based energy software company.

3

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- a That's comparable with the average savings the company experienced in its first municipal pilot program.
- b In the program, customers were essentially paid to turn down their ACs during peak times.

4

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- a Messages that destroy myths can be effective.
- b The messages do not require much background information or drastic changes in behavior to implement.

5

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- a American households could save 20% of household direct emissions or 7.4% of US national emissions.
- b American households account for around 38% of US carbon emissions.

**7** Translate each of the Chinese sentences into English by using the underlined phrase or structure in the example.

- 1 Along with these other improvements, changing human behavior is another, very important wedge.

同佛罗里达和夏威夷一样, 加利福尼亚也是最受欢迎的美国旅游目的地之一。

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- 2 The company also sometimes calls residents prior to heat spells to ask if they would reduce their air conditioning use the following day.

她去世的前一天还来看了我。

---

- 3 He stated that "people look to their utility for information."

他们希望政府能提供额外的帮助。

---

- 4 He continued that "even in places where a utility has low levels of trust, people still prefer dealing with them rather than a third party."

这个动物园需要的是更好的管理而不是更多的资金。

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- 5 That's comparable with the average savings the company experienced in its first municipal pilot program in Baltimore.

我们的价格和其他商店的差不多。

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# Academic writing

## Micro-skill: Formality

There are different types of writing, such as notes, blogs, letters, reports, essays, theses, and papers for different purposes. They differ in many aspects, among which the most noteworthy is the degree of formality. Essays, theses and papers are the most common academic writing. They differ from the non-academic primarily in terms of the formal tone, which is reflected by both lexical choice and syntactical factors.

Lexical choice is a factor to be considered in formal writing. One way to increase the level of formality is to upgrade most rough-draft general verbs to more precise verbs. For example: instead of using *be*, *see*, *have*, *get*, use *exist*, *observe*, *assess*, *measure*, *determine*, *possess*, *confirm*, *characterize*. The following are more tips on lexical choice.

- Avoid colloquial language, e.g., *kids*, *awesome*; use *children*, *wonderful* instead.
- Avoid abbreviated words, e.g., *tech*; use *technology* instead.
- Avoid phrasal verbs if possible, e.g., *carry out*; use *implement*, *execute*, *conduct* instead.

A formal writing style is also dependent on syntactical factors. Longer sentences are more prevalent in formal writing, so it is advisable to combine short simple sentences and make complex or compound sentences. For example:

*Coal is plentiful. Its price is stable. →  
Coal is plentiful, and its price is stable.*

When reporting scientific facts or observations, the passive voice and third-person subject can sound more objective. For example:

*They have proposed various strategies to achieve these objectives. →  
Various strategies have been proposed to achieve these objectives.*

The following are more tips on syntactical factors.

- Avoid using contractions, e.g., *it'll*, *don't*; use *it will*, *do not* instead.
- Avoid a personal and emotional tone, e.g., *I think this experiment shows ...*; use *The result of this experiment implies ...* instead.
- Avoid addressing readers with second-person pronouns, e.g., *you*; use *one* instead.

**1** Choose a more precise verb from the box to replace the general verb or phrase underlined in each sentence.

adopt	endeavor	constitute	initiate	prove
undertake	possess	resolve	provide	deem

- \_\_\_\_\_ 1 Fresh-water lakes and streams give nearly all of our surface water supplies.
- \_\_\_\_\_ 2 Neither side would rationally start an attack which only results in its own destruction.
- \_\_\_\_\_ 3 The scales of some fish have the strange property of glowing in the dark.
- \_\_\_\_\_ 4 We have the possibility to do this work ourselves.
- \_\_\_\_\_ 5 After much deliberation, the president decided to take her suggestion.
- \_\_\_\_\_ 6 I consider it highly important and necessary to let our American friends clearly understand the position of the Chinese government.
- \_\_\_\_\_ 7 Employers must show genuine concern for worker safety and try to eliminate hazards.
- \_\_\_\_\_ 8 These concepts will turn out to be quite useful in our subsequent work.
- \_\_\_\_\_ 9 Further analyses and observations will almost surely work out this discrepancy.
- \_\_\_\_\_ 10 A slight error in thought may make a life-long regret.

**2** Choose a formal word or phrase from the box to replace the colloquial one underlined in each sentence.

multiple	sufficient	approach	in any event
demanding	abundant	scarce	slightly

- \_\_\_\_\_ 1 The diameter of Mars is a bit over half that of the earth.
- \_\_\_\_\_ 2 One of the strengths of the computer is its capability to have many copies of software running simultaneously.
- \_\_\_\_\_ 3 Anyway, the debate over which test is stricter is somewhat fruitless.
- \_\_\_\_\_ 4 Given enough time, we prefer more formal usability testing.
- \_\_\_\_\_ 5 The job is extremely hard, both physically and mentally.
- \_\_\_\_\_ 6 This is a country blessed with plenty of natural resources.

- \_\_\_\_\_ 7 Economics is the study of how people choose to use limited productive resources.
- \_\_\_\_\_ 8 We find this way potentially problematic.

**3** Make the following sentences more formal by following the tips previously offered.

- 1 Today's power grids won't be able to support the energy goals of the future.  
\_\_\_\_\_
- 2 Like all great inventions, the light bulb can't be credited to one inventor.  
\_\_\_\_\_
- 3 You can hardly imagine what life would be like without fossil fuels.  
\_\_\_\_\_
- 4 When considering things such as energy independence, you have to consider all of the potential consequences involved.  
\_\_\_\_\_
- 5 We cannot separate the global warming problem from the energy problem.  
\_\_\_\_\_
- 6 We have found no evidence of groundwater contamination.  
\_\_\_\_\_
- 7 Nuclear energy should be an option. Nuclear energy should not be the only option for the future.  
\_\_\_\_\_
- 8 The global oil supply will not sustain an overpopulated planet. That is obvious.  
\_\_\_\_\_

## ➤ Macro-skill: Topic sentence

A paragraph is a collection of related sentences dealing with one (and usually ONLY one) main idea. An effective paragraph typically includes a topic sentence, some supporting sentences, and sometimes a concluding sentence.

The topic sentence clearly states the main idea, and serves to control the development of the paragraph. The topic sentence, usually (but not always) the first sentence in a paragraph, has the following typical features.

First, a topic sentence is a complete sentence, making a statement about a topic. For instance, the following are NOT topic sentences, as they are phrases rather than complete sentences:

*How to adapt to college life*

*The rapid growth of solar energy consumption*

*Harnessing wind power*

Second, a topic sentence consists of two parts: a topic (T) and a controlling idea or a comment (C), so that the topic is discussed in a specific area. For example:

*Adapting to college life can be a frustrating experience for fresh students.*

(T)

(C)

*The rapid growth of solar energy consumption can be attributed to several factors.*

(T)

(C)

*Harnessing wind power requires not only technology but also environmental concern.*

(T)

(C)

Third, a topic sentence should not be too general or too specific. As the most general statement in the paragraph, it should not be too general; otherwise, it will not limit the topic to a specific direction. Neither should it be too specific; otherwise, it will leave no room for development. For example:

*Adapting to college life is important. (too general)*

*To adapt to college life, Tom gets up early every morning. (too specific)*

**1** Read the following topic sentences and decide which one is the best and what is wrong with the others. Write “too specific”, “too general”, “incomplete” or “best TS” on the lines before them.

- \_\_\_\_\_ 1 Solar energy comes from the sun.
- \_\_\_\_\_ 2 Solar energy is of importance.
- \_\_\_\_\_ 3 The potential of serving American market with solar energy is immense.
- \_\_\_\_\_ 4 The rising of solar energy.

**2** The following sentences in a paragraph are scrambled. Decide which sentence is the topic sentence, and then put the sentences in the right order.

- \_\_\_\_\_ 1 When the wind dies down or there is heavy cloud coverage, less power can be generated.
- \_\_\_\_\_ 2 One of the biggest problems with producing electric power is that we essentially have to use it or lose it.
- \_\_\_\_\_ 3 The new renewable technologies we are counting on to help reduce our global carbon footprints all depend on the environment itself to generate energy.
- \_\_\_\_\_ 4 The same problem applies to more traditional forms of energy, whether it is nuclear power, hydroelectricity, or fossil fuels.
- \_\_\_\_\_ 5 And when conditions are perfect, we often generate more than we can use.

**3** Write two or three topic sentences for each of the following topics.

1 fossil fuels

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

2 WeChat

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

3 the dormitory

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

4 the student club

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

5 the part-time job

1) \_\_\_\_\_

2) \_\_\_\_\_

3) \_\_\_\_\_

**4** Read the following paragraphs and write a topic sentence for each of them in the space provided.

1 \_\_\_\_\_

The US wind industry added nearly 15,000 new jobs in 2016, reaching a total of 102,500 full-time equivalent jobs in all 50 states, up from 50,500 jobs in 2013. Wind power technician is the fastest growing job in the US, according to the Bureau of Labor Statistics. Texas, the national leader in installed wind capacity, also has the most wind-related jobs with more than 22,000, followed by Iowa, Oklahoma, Colorado, and Kansas, each having 5,000 to 9,000 wind jobs.

2 \_\_\_\_\_

The first is the danger to political and economic security posed by the world's dependence on oil. Next is the risk to the global environment from climate change, caused primarily by the combustion of fossil fuels. Finally, the lack of access by the world's poor to modern energy services, agricultural opportunities, and other basics needed for economic advancement is a deep concern.

3 \_\_\_\_\_

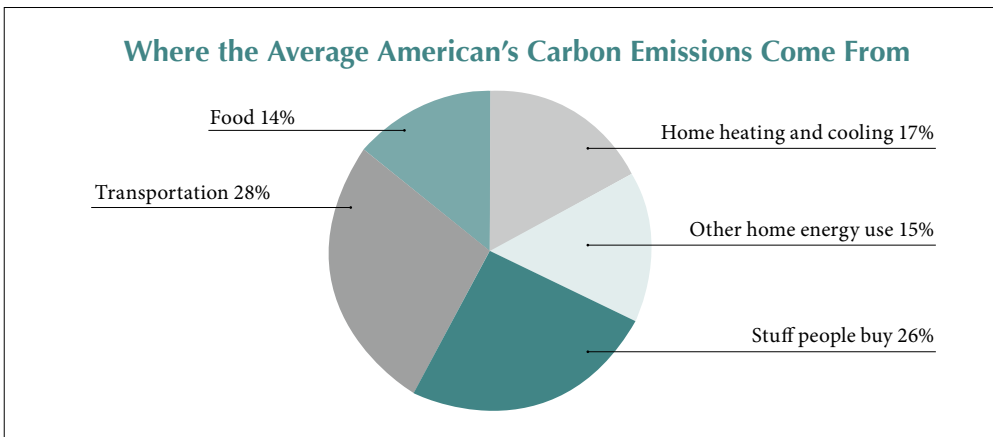
The geopolitical model lets us anticipate future developments and, in some instances, make predictions. It helps us establish the importance of information in relation to the model and it shows us paths that might help us reach our goals.



# Sharing

Complete the description of the pie chart below, and then give your ideas about reducing your carbon footprint in your daily life.

- 1 Complete the description of the pie chart below by following the clues provided.



The pie chart illustrates \_\_\_\_\_. As is shown in the chart, \_\_\_\_\_ and \_\_\_\_\_ account for 28% and 26% respectively of overall carbon emissions in the US, becoming the major sources of carbon footprints; \_\_\_\_\_ and \_\_\_\_\_ together make up 32%, and the remaining 14% comes from \_\_\_\_\_.

- 2 In view of the major sources of the carbon emissions, what can you do in your daily life to reduce your carbon footprint? Work in groups and discuss your ideas and write down the major points of the discussion.

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- 3 Share your group ideas in the class.