

## ***Your Expert Paper***

This course, overall, is broad and wide – an overview course if you will. Your expert paper, in contrast, allows you to dig in and become an expert in a specific and highly relevant topic related to sustainable energy solutions and technology.

**Objective: To write a professional expert paper explaining a sustainable energy solution.**

This paper is for a specific audience: *the President of the United States!*

(S)he has some questions and you, as the scientific advisor, have to produce a briefing paper with the answers. Feel free to write your briefing papers for a different audience, for example your sister, uncle, neighbor, etc. but always keep your audience in mind!

- What information does this person need to better understand the technology?
- What information does this person need to make informed decisions?
- What illustrations, figures, and data would be useful for this person?
- What additional sources of information would this person appreciate for further in-depth study?
- How do you present the information in a way that is concise, engaging, and understandable?

### **Expert Paper Topics**

Below are six topics or questions for your briefing paper – all are cutting-edge, much in the public debate, and/or have the potential to have a major positive impact globally. Of course, there is also Topic 7 = your choice!

#### **1) Biofuels**

“So...I’m really confused about biofuels...sure sounds like a great solution...explain this to me! What’s the difference between these first, second, third, and fourth generation biofuels? What’s the difference between bioethanol and biodiesel? What’s wrong with U.S. corn as biofuel crop anyways – the corn farmers in the Mid-West sure like it – why should we use slimy algae...it that the solution? Does that fix the food vs. fuel issue? What about China and India? And, I heard that biofuels will also fix global warming – is that correct?”

#### **2) Nuclear Power**

“Sure sounds like the perfect solution – unlimited energy without any greenhouse gas emission! But, do we have enough fuel for our nuclear power plants? How do we get our nuclear fuel anyways? What about the waste...do we have a solution for our waste? What about China and India? What about cost – is this really cost-effective? Also: safety! And: can’t we make nuclear bombs using nuclear power plants? Why haven’t we built a nuclear plant in decades? This is all too confusing...can you explain this to me?”

#### **3) Transportation Solutions**

“In short – what’s the car of the future: gasoline, diesel, hybrid, plug-in hybrid, electric, biofuel, fuel cell – it’s all so complicated! When can I buy these new green cars? What’s flex fuel and PZEV? Or grease cars? What about motor cycles, planes, trucks, trains, ships, etc...how will we fuel those? Are there any alternatives to owning a car or personal transportation? What about China and India? This is all too confusing...can you explain this to me and help me buy a new car?”

**4) Geothermal Solutions**

“I hear there is literally unlimited energy below us – all we need to do is drill 5 miles deep – how does that work and why are we not doing that? Is there anybody doing that? My neighbors used geothermal to heat and cool their house back in the 1970s...I forget how that worked – is that the same thing? And: the US is already the world leader in geothermal energy production (I had no idea...), how are we doing that? What about China and India? This is all too confusing...can you explain this to me?”

**5) The Smart Grid**

“What’s that Smart Grid thing everyone is talking about – I guess they already have it in Italy? Al Gore says we need to balance supply and demand for electricity (something about storage???) and use electricity as the primary energy carrier, what does that mean? And how do we get electricity when there is no wind or at night? And how does that relate to cars, my house, and my appliances? What about China and India? This is all too confusing...can you explain this to me?”

**6) Clean Coal**

The coal lobbyists are telling me all about Clean Coal – I don’t get it! I always thought that coal is dirty and burning coal causes global warming and air pollution, so how can they claim that coal can be clean? I also heard Al Gore talking about carbon capture and storage (CCS) in his movie – what’s that? – sure sounds like the perfect solution – we have tons of coal! What about China and India? But what about the oil and gasoline we use: can we capture that carbon as well somehow – I heard something about artificial trees or CO2 air capture?”

**7) Your Own Topic**

Select your own topic that you find interesting and frame it as a series of 3 to 5 specific questions from your audience that you will address and answer in your briefing paper.

Note: This option requires prior approval!

**Expert Paper Format**

Regardless of your topic, the President wants his/her briefing in this specific format:

Page 1	Cover page with your name, date, and the briefing topic.
Page 2	Table of Content
Page 3-7	Five pages of written briefing, no less, no more.
Page 8	Figure 1 – include a useful figure (e.g. graphic, diagram, chart, etc.) that illustrates your topic. This figure should be relevant, understandable, and accurate. Include a useful caption that explains the figure in a few sentences.
Page 9	Figure 2 – see above.
Page 10	Table 1 – include a useful table with data related to your topic. The table/data should be relevant, understandable, and accurate. Include a useful caption that explains the table/data in a few sentences.
Page 11	Photograph 1 – include a photograph to illustrate your topic. Include a useful caption that explains the photograph in a few sentences.
Page 12	References – list the sources you used for this briefing.
Page 13	10 additional sources for further in-depth study. Please include a variety of types.

Details: 1 inch margins; font: Times Roman 11 with 1.5 lines line spacing; page numbers on each page

Your audience expects proper English, so proof-read your work for spelling, style, and grammar. Please use headings/sub-headings and bulleted/numbered lists to organize your writing – do not simply write long paragraphs. Your audience also expects an organized structure/layout, attention to detail, and an overall professional product.

### Expert Paper Timetable

This timetable is designed to give us enough time to proof-read, edit, review, improve, and revise our briefing papers.

➔ *Nobody writes a professional scientific paper alone in a vacuum!*

In fact, peer-review and revisions are integral parts of science. Furthermore, you always have an editor whenever you publish a paper to improve your writing, especially for organization, clarity, and style.

Due Date	Task	Details	Done?
We (9/21)	Topic Selection	Send an Email with your choice or an explanation of your Topic 7 and associated questions	
We (10/5)	Library Session	Research methods and library resources with Teri Shiel and Oliver Zeff in Ely Library classroom.	
We (10/19)	Draft 1	Table of content, briefing outline, 1 figure, list of sources/bibliography.	
Mo (10/24) We (10/26)	Edits Draft 1	You will receive edits and comments for Draft 1.	
We (11/16)	Draft 2	Complete briefing due for peer-review and instructor review.	
<i>At your discretion</i>	<i>Reading and Writing Center</i>	<i>Make your own appointment(s) as needed.</i>	
We (11/23)	Edits Draft 2	You will receive your peer-review and instructor review of Draft 2.	
We (12/7)	Final Briefing	Final Briefing is due.	

### Expert Paper Assessment

Topic Selection	10 points
Library Session	10 points
Peer-review of a briefing	10 points
Reading & Writing Center session	10 points
Draft 1	10 points
Draft 2	20 points
Final Briefing	30 points
	100 points total

You will receive detailed grading rubrics for Draft 1, Draft 2, and the Final Briefing. Professionalism and attention to details and due dates are always part of the assessment.

### Confused? Ideas? Questions? Unclear?

Talk to me anytime, ask me for examples/resources/ideas, or show me a draft.