

ACADEMIC SKILLS REVIEW

Session I

Mgr. Martin Jirušek, Ph.D.

Structure of the lecture

- Academic genres
 - essay
 - review
 - literature review
 - position paper
 - policy paper
 - fact sheet
 - research paper
 - poster
 - SWOT analysis
 - thesis
- Formal aspects of written texts
 - Introduction
 - Conclusion
 - Structuring a text
 - Annotation, abstract, resumé
 - keywords, content and annexes

Division of genres in social sciences

□ **Normative & subjective**

- SWOT + recommendations
- Policy paper
- (position paper)

□ **Non-normative**

a) *Subjective*

- Review
- Essay
- Position paper

b) *Objective*

- Research paper
- Poster
- Factsheet
- Literature review
- Thesis

Essay

- „Development of a line of argument strongly supported by reference to a literature“ – similar to a position paper (which is more normative) and (partly also) to literature review
- Usually shorter articles -> often need for arbitrary reduction of a broader topic
- **Subjective & usually non-normative**
- Essay is based on author's opinion. **A plain literature/opinion review/description is NOT an essay!**
- Should include literature/opinion review
- Should be rather brief

Essay – typical structure

□ Introduction

- context
- important terms, concepts, opinion review
- author's opinion/position/confrontation with other opinions (use references/provide evidence when building an argument)

□ Conclusion

- the most interesting/significant findings
- implications of findings
- should NOT include anything new (that has not been stated in the text) – **applies for conclusions in general!**

Review

Assessing a text from a subjective point of view

Non-normative & subjective

- 1) Identification and introduction – presumed main aspects of the text
- 2) Summary of a content
- 3) Author's opinion – critical analysis of the book and its main features/aspects
- 4) Conclusion, addressing initial expectations

Literature review

- Usually in initial stages of a research or writing
- **Non-normative & objective** (does not provide opinion but is influenced by the purpose of the research)
- Depends on the rationale behind the research
- To provide overview of published articles/studies
- To show awareness and knowledge
- To present gaps/unsolved issues in the literature
- To present the need for further examination
- To justify your research (used in a purpose statement)
- To organize knowledge

Literature review

- Process depending on researcher's experience (can start from 1, 2 or 3)
 - 1) discovering what is it all about
 - 2) differentiating what is important
 - 3) sorting according to relevance

Position paper

Subjective and usually non-normative

- To outline your viewpoint on an issue
- Formally inform others of **your position**
- (To present a unique solution or approach to a specific issue)
- To demonstrate your awareness of the issue (used in courses curricula)

Position paper

- 1) Introduction, review of the situation
 - 2) Presenting your position
 - 3) Developing your arguments
 - 4) Conclusion (recommendation)
-
- Usually shorter in length (approx. 2 pages)
 - Includes literature/opinion review
 - Proves familiarity with the topic
 - Addresses existing literature/opinions critically

Policy paper

Normative & subjective

- To suggest implementation of a certain approach
- To provide an alternative to a certain policy
- To supplement the targeted audience with enough data to make a decision
- To make a clear statement of how to change stg.
- Has to deal with **current** topics/policies
- assessment of past policies/issues is NOT a policy paper

Policy paper

- 1) Overview of current situation/policies
- 2) Purpose statement (reasons for change)
- 3) Suggested options
- 4) Evaluation of suggested options (+/-)
- 5) Recommendation of a particular solution + reasoning
- 6) **Implementation plan**
- 7) Conclusion

Fact Sheet

Non-normative & objective

- Presenting data in brief form using tables, bullet points, graphs, etc.
- Quite often one page in length
- Must be self-contained and easy to digest

- To present information & data
- To familiarize targeted audience with facts

Household Energy Use in Arizona

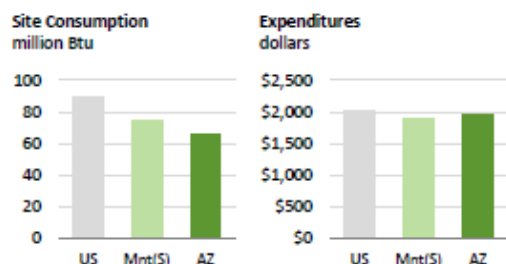
A closer look at residential energy consumption

All data from EIA's 2009 Residential Energy Consumption Survey
www.eia.gov/consumption/residential/

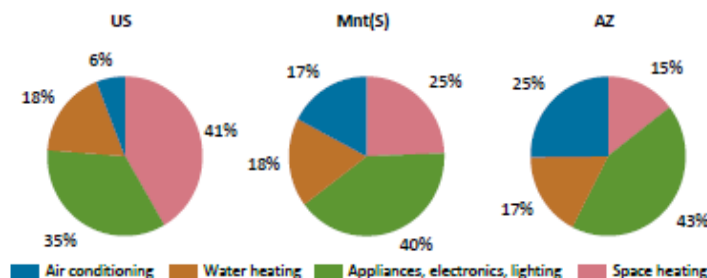
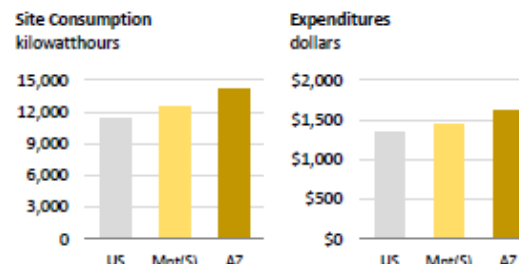
- Arizona households use 66 million Btu of energy per home, 26% less than the U.S. average.
- The combination of lower than average site consumption of all energy, but above average electricity which is relatively expensive, results in Arizona households spending 3% less for energy than the U.S. average.
- More reliance on air conditioning keeps average site electricity consumption in the state high relative to other parts of the U.S.



ALL ENERGY average per household (excl. transportation)



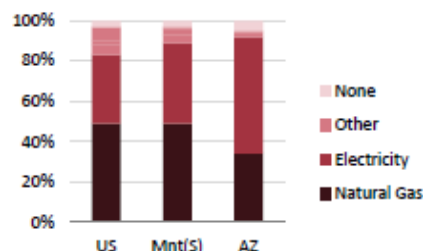
ELECTRICITY ONLY average per household



CONSUMPTION BY END USE

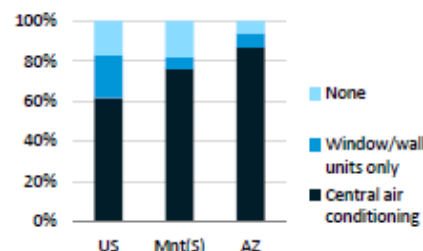
A quarter of the energy consumed in Arizona homes is for air conditioning, which is more than four times the national average. In Arizona homes, space heating accounts for just 15% of total energy use.

MAIN HEATING FUEL USED



Compared to the U.S. average, a greater share of Arizona residents (58%) use electricity for heating.

COOLING EQUIPMENT USED



More than 90% of Arizona households use air conditioning, and 86% of homes have central air conditioning for cooling.



Research paper

(Non)normative & objective

- Normativity depends on the research subject
- Presentation of research outcomes and how they were collected
- Presents the whole research process
- Published in academic journals
- Stressing what is important
- Coherent and easy to follow

Research paper

1) introduction

- introduction to the issue
- purpose statement
- theoretical context (sometimes separately as no. 2)
- aim of the research

2) sources and methods

3) results

4) interpretation/discussion

- Follows the „what-why-how“ structure (see further)
- Usually does not include detailed description of the whole process

Poster

- Objective & (non)normative
- Used at conferences, conventions, exhibitions,...
- Presentation of a research/ research plan in **brief and comprehensive** way
- Similar to a fact sheet in the way the information is presented (tables, graphs, pictures,...)
- Prepared to be presented and understood in a multi-disciplinary environment
- Follows the process of research paper in concentrated form (objective, purpose, methods, results, discussion/further work)

Evolving Context of Smart Grid: Technology and Policy across States and Utilities

Clark Koenigs¹, Mudita Suri¹, Elizabeth Wilson¹
 Tarla R. Peterson², Jennie C. Stephens³
 University of Minnesota: Twin Cities¹

Defining Smart Grid

"Smart Grid" represents competing visions of technological and social change associated with meeting growing electricity demand, increasing system efficiency & reliability and managing electricity consumption. The term "Smart Grid" encompasses many components of our energy system like energy efficiency, renewable integration, electric vehicles, grid infrastructure, two-way communication tools and effective generation.

Methodology

We analyzed 200 documents discussing "Smart Grid" from states and utilities across five states—Texas, Illinois, Minnesota, Massachusetts and Vermont. We coded the documents using a thematic qualitative policy analysis built on the Soda-Political Evaluation of Energy Deployment (SPEED) framework (Stephens et al., 2008).



Figure 3: Methodology schematic

We identified 200 documents from state and utility web pages searching for "Smart Grid" and "Smart Meter" and coded them by paragraph, analyzing the motivations for developing a "Smart Grid" the technologies used, and the social context. We sorted results by state, utility, and utility type coding documents by coverage: no mention, low (0-30%), medium (31-50%) and high (above 50%).

Background to States & Utilities

States are located within Regional Transmission Organizations (RTO), and utilities are governed by state laws. Utilities can be investor-owned, municipal and rural electric cooperatives.



Figure 2: United States RTO map

State	Population (Million)	Total Generation (TWh)	Per Capita CO2 Emissions (Metric Tons)	Renewable from Total	Average Electricity Price (\$/kWh)	Electricity Market Status
Texas	25.2	401.7	25.56	7.04	5.5	Restructured
Illinois	12.8	201.3	17.88	2.82	6.1	Restructured
Minnesota	5.2	53.7	17.31	11.84	6.6	Traditionally Regulated
Massachusetts	6.5	43.8	11.36	1.36	14.5	Restructured
Vermont	0.6	6.6	9.64	27.63	13.2	Traditionally Regulated
US Average	31.9	40.3	21	11.53	11.9	---

Table 1: State Energy Profile & Demographic Overview

State	Number of Smart Grid Projects	Project Budget (Million \$)	Most Prominent Project Technology
TX	19	2380	Transmission Automation & AMI
IL	5	64	SCADA, Transmission Automation
MA	5	18	AMI, Smart meter
VA	3	183	AMI, Distribution Automation
VT	4	275	AMI

Table 2: State "Smart Grid" Project Profile

Policy Analysis

- The policy context for "Smart Grid" is shaping how "Smart Grid" technologies are being funded across and within different stakeholder groups.
- Many crucial decisions affecting "Smart Grid" deployment are determined by state-level policies and utility programs. How these policies affect "Smart Grid" deployment across jurisdictions is not well understood.
- We summarized state-level legislation on distributed generation, net metering, demand response, renewable energy integration and renewable portfolio standards and analyzed documents created by State Energy Offices and Public Utility Commissions and utilities to explore how these groups are framing the opportunities and challenges of "Smart Grid."

RTO	State	UTILITY TYPE		
		Investor Owned	Municipal	Rural Electric Coop
TX	TX	TX Energy, Energy Services, Bellco Energy, NRG Energy	Austin Energy, CPS Energy	Predecessor Electric Cooperative
	IL	American Electric, Commonwealth Edison, Midwestern Energy	City of Naperville, Peoria Municipal Utility	Southeastern Illinois Electric
MISO	IL	Midwestern Power, Great River Energy, Xcel Energy	EMC Rochester, Municipal Public Service Utility	Minnesota REA, State Valley Energy, Great River Energy, Touchstone Energy Cooperative
	MA	Public Service of New Hampshire, Entergy Electric Light Department, Western Massachusetts Electric Company, NESCA Electric & Gas, Massachusetts Electrical Wholesale Electric Company	Reading Municipal Light Department, Holyoke Gas & Electric Department, Salem Electric, Commonwealth of Massachusetts, Concord Municipal Light Plant, Rutland Light and Power, Springfield	None
NY	VT	Green Mountain Power	Wilmington Electric, Green Mountain Electric Cooperative	Wilmington Electric Cooperative

Table 3: State Utility Profile

Results: Utilities

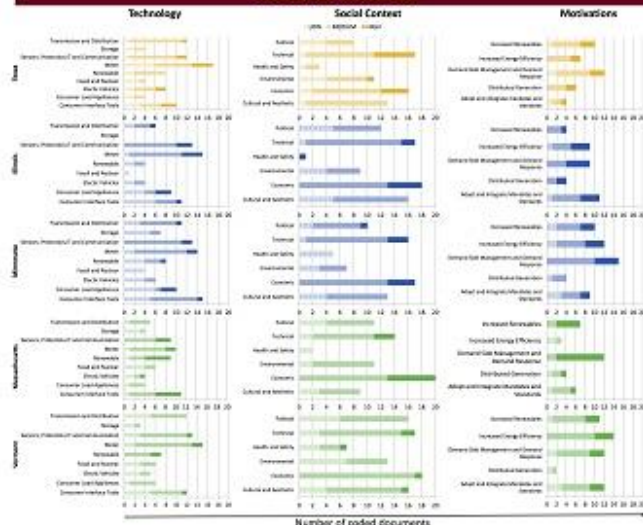


Figure 3: NVFD Results for Utilities

Discussion and Conclusions

- All states and utilities focus on Transmission & Distribution and Meters with Electric Vehicles and Storage mentioned less frequently.
- All states and utilities framed "Smart Grid" in terms of economic and technical aspects, focused on cost recovery, economic incentives and technical compatibility of "Smart Grid" components.
- VT and TX have more than 50% of advanced meter coverage, but while the documents do not mention it more than other states, the nature of the conversation is different and focused on practical implementation and experience.
- States in the ERCOT (TX) and MISO (MN, IL) mention Renewables with a low frequency and Sensors & Communication with a high frequency. NECA states (VT, MA) were opposite, even though they have lower installed Renewable capacity.
- Results of this analysis contribute to improved understanding of the scale and type of "Smart Grid" development and potential opportunities across utilities, states, and regions.

References

- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.
- Stephens, J., Suri, M., & Wilson, E. (2008). Socio-political Evaluation of Energy Deployment (SPEED) methodology: A framework for analyzing energy policy and technology. *Energy Policy*, 36, 1048-1058.

Acknowledgments

This research is supported through a grant from the National Science Foundation Science and Learning Program. Our primary PI is LARRY R. STEPHENS (R1 and CRI) and our other PI is JENNIE C. STEPHENS (CRI). We acknowledge the support of the University of Minnesota, Twin Cities, Department of Public and Political Science, Rosen Institute, and Department of Mechanical Engineering, Twin Cities and Minneapolis-St. Paul campus.

SWOT analysis

Subjective & normative (if recommendations are included)

- Structured method used for assessing a particular issue
- Presenting Strengths, Weaknesses, Opportunities and Threats in comprehensive and understandable manner
- Use **precise and verifiable** statements (no impressions, feelings!)
- Prioritizes influencing factors
- Recommendations should be derived from clear outcomes

Strengths

1. Excellent and quality products
2. Good relationship with employees
3. Number of stores are there in UK
4. Long term relationship with suppliers
5. Procedures are simplified to increase efficiency of operational processes
6. The updated technological development in the operation proves to be beneficial for the financial base of the organization

Weaknesses

1. Clarity in marketing strategies are lacking
2. Bureaucratic cultural organization
3. Customer service is poor
4. Technology is poor, M&S is unable to provide an accurate readings of its stock in each of its stores
5. Demands of every segment were not utilized instead it viewed market as a whole
6. everyday operations were given more importance in comparison to strategic planning

SWOT

Opportunities

1. Keeping in line with the competitors, M&S must enter e-business in an effective way
2. Rapid changes in technology. M&S needs to keep ahead of its competitors
3. Increase in power of M&S for developing customer and supplier base due to the availability of tools such as internet, e-commerce.
4. Increasing shopping requirement in order to bring changes in lifestyle of customers
5. International accessibility to supply channels

Threats

1. Competition becoming intense
2. Internet technology enables consumers to shop from home
3. Expansion in international markets less successful for M&S
4. Variation of the trading rules, conditions, custom duties and taxation among countries
5. Domination of international markets due to global brands from long time

Thesis

- Similar to writing an article/research paper, only much worse
- Keep that **WHAT-WHY-HOW** structure
- Mind the structure of the whole **text...**
 - introduction, purpose, literature review, methods, results, discussion & conclusion (conclusion mirroring introduction and addressing ALL questions from the introduction)
- **...page**
 - at least 2 paragraphs per page
- **...and paragraph**
 - topic sentence, body (supporting sentences) – at least 5-7/paragraph, concluding sentence (addressing the topic sentence)
- **paragraph = hamburger** - able to make sense on its own

Probably the most important thing to remember...

- Research paper & thesis should not only present outcomes of the research but should also serve as **description of the research process**.
- The aim is to provide a description enabling reader to **replicate the research** and come up with the same conclusions.
- This enhances **reliability** of the research.

Formal aspects of written texts



JORGE CHAM ©THE STANFORD DAILY

phd.stanford.edu/comics

Introduction

- To familiarize the targeted audience with the topic, its importance and research methods (sometimes as individual chapter)
- „**WHAT-WHY-HOW**“ structure
 - 1) Introduction to the issue
 - 2) narrowing of the topic
 - 3) purpose statement
 - 4) aim of the work
 - 5) (review of previous work)
 - 6) clarifying the time frame and other characteristics
 - 7) (methods and sources)
 - 8) (risks)
 - 9) (division of the work)

Introduction II

- ...should catch reader's attention
- ...should address theory, methodology and realization
- ...should be structured
- Its length should correspond with the body of the text
- ...may include expectations regarding outcomes
- ...may include concerns regarding possible risks

Conclusion

- Should reflect introduction and address all questions/hypotheses
- No new information should be included in the conclusion
- Length should correspond with the body of the text
- 1) Summary of the issue and conclusion which is then further elaborated
- 2) Specific outcomes and how we reached them
- 3) Answer to research questions/verification of hypothesis
- 4) Risks and limits that occurred during the course of the research and how we addressed them

Abstract

- Traditionally used in English speaking countries
- Precedes longer academic text, informs about the content and examined issue
- Short & concentrated form (1 / 2 page)
- No citations/references
 - can be presented individually as a stand-alone text
- depersonalized
- Linear/non-linear
- Including/not - including results

Resumé / summary

- Originates in French tradition
- Similar to linear abstract including results
 - usually longer (1-1,5 pages)
- „mini version of the text“
- includes results
- linear

Annotation

- Used with longer works (books)
- Characteristics of the work (including genre, author's bio, targeted audience, etc.)
- Does not include information about results and/or main arguments and findings
- Used on book covers/bookmarks to attract and inform
 - 1) annotation in a scientific journal – information about a newly published book
 - 2) Publisher's annotation – highlighting features of the book, persuasive, very brief

Considering the content...



résumé/summary – abstract – annotation
always – sometimes - never

Keywords

- Words or **terms** (energy, energy security,...)
- Characterize the text/issue
- Used for searching and orientation
- Nouns, nouns + adjectives
- At least 3, max. 6 (usually)

Content

- Should address important parts of the text
- Enhances orientation in the text
- Usually up to 3 levels

Annexes

- Related to references & reliability
 - same rules as applied to the actual text
- **Research should be replicable!**
 - annexes include materials used during the research
 - Maps, figures, tables, charts, ...
- Statement of availability if annexes are not included **for a good reason** („Is available on demand...“)

Home assignment

- **Poster presenting a research project**
- Students can use their earlier work (bachelor/master thesis)
 - a research topic with proper description and reasoning and research question
- Supplemented with a literature review (submitted separately)
 - at least 10 relevant sources out of which there will be: 3 books, 5 articles and 2 sources of different nature
 - each source will be followed by short description (2-3 sentences) justifying its relevance
- Students should consult their project with the lecturer.
- Must be uploaded into the Information System **by March 9 23:59**
 - PDF, JPEG, ...
- Poster will be presented at the 3rd session
 - 10 min each + Q&A

Thank you for attention



jirusek.martin@mail.muni.cz