# To Want or To Waste: An Exploratory Case Study on Decision-making in King County Regarding Landfill Alternatives

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## Abstract

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The King County Council voted to approve the 2019 Comprehensive Solid Waste Management Plan ("the Plan"), expanding the Cedar Hills Regional into its final cell and committing the County to landfilling until 2040. Two studies were conducted by external consultants regarding the feasibility of landfill alternatives, specifically a waste-to-energy (WTE) facility, and both recommended the County pursue WTE. To examine the Council's decision to instead pursue landfill expansion, I conducted an exploratory case study using 35 coded news and opinion articles, a map of 2,082 air quality complaints (AQCs), and 10 semi-structured interviews as data sources. I contextualize my study within the decision-making theories of rationalism and incrementalism, as well as an extension of the rank order PESTE model (Politics, Economics, Social, Technology, and Environment, expanded to include Waste Quality and Quantity). Findings revealed that economic factors were discussed the most in news coverage, while social factors were discussed the least. Of the AQCs, the majority were odor issues from locations within two miles of the landfill, with the farthest complaint being from 13 miles away. Of the records I received, all the AQCs occurred within the two county districts that voted to reject the Plan, and thus reject landfill expansion. From the interviews with Councilmembers and relevant staff, I gathered that Councilmembers whose key issues didn't include WTE or waste management employed deference to the Solid Waste Division's recommendation for landfill expansion, so they voted to approve the Plan. If a Councilmember was passionate about this issue, or this was one of their key issues, they voted to reject the Plan.

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## Acknowledgements

I would like to thank all of the interviewees from King County that contributed to my research. I'd also like to thank the interviewees from Spokane who provided perspective from a municipality that was able to change their "business-as-usual" waste disposal method from landfilling to waste-to-energy. I gained so much from these conversations, more than I could include in this thesis but will take with me into the future. I owe my thesis advisor, Shawn Hazboun, a significant amount of gratitude for her patience as I continued to extend my thesis deadline. Her advice and support throughout this process was invaluable to my research and helped me accomplish a piece of work I can truly be proud of. I'm also grateful for Kathleen Saul's guidance as I began developing my research method, and for allowing me to borrow her copy of the "case study bible", *Case Study Research and Applications* by Robert K. Yin. Thank you to Mike Ruth for his direction and support in incorporating ArcGIS mapping software into my thesis. Finally, to my family and friends whose support I could not have gone without, there are few words to describe the amount of love I have for you. Thank you for keeping me laughing while I clung to sanity in the final weeks of writing this thing.

# Introduction

"The vote is five ayes, two no's," said the County Clerk. That nights' King County Council Chair, Rod Dembowski, confirmed, "By the barest of majorities required by the charter of this County, which is five votes, the proposed substitute ordinance 2018-0375.4 is approved." And with that, the decision was made. With five Councilmembers voting to adopt the 2019 Comprehensive Solid Waste Management Plan ("the Plan"), King County would move forward with landfill expansion (Regional Policy Committee, 2019).

King County has a long history of expansion at the Cedar Hills Regional Landfill ("the landfill"). Covering 1.4 square miles in unincorporated King County, the landfill opened in 1965 to consolidate the previous sixteen open-air landfill systems, making it the only local landfill available that can manage the County's municipal solid waste (Solid Waste Division, 2018). The County's Solid Waste Division is responsible for preparing comprehensive plans that establish a twenty-year planning horizon for solid waste management. In 2001, the County adopted a Comprehensive Solid Waste Management Plan that anticipated the landfill would reach capacity by 2012, directing the County to develop Area 6 and begin planning to export waste to an out-of-county landfill (Solid Waste Division, 2001). In response, the County Council adopted the Cedar Hills Site Development Plan in 2006, which approved the development of Area 7 and extended the landfill's lifespan to 2016 (Solid Waste Division, 2006). The 2013 Comprehensive Plan, an update to the 2001 plan, recommended building Area 8 to prepare for Area 7's closure in 2018, further extending the lifespan to 2028 (Solid Waste

Division, 2013). Figure 1 maps out this timeline of expansion by landfill cells, focusing on area developments that have occurred since the 2019 Comprehensive Plan. Area 8 is where the County is currently disposing of its solid waste and once that cell reaches capacity, the 2019 Plan approved Area 9 for landfilling. This is being referred to as the landfill's "final cell".

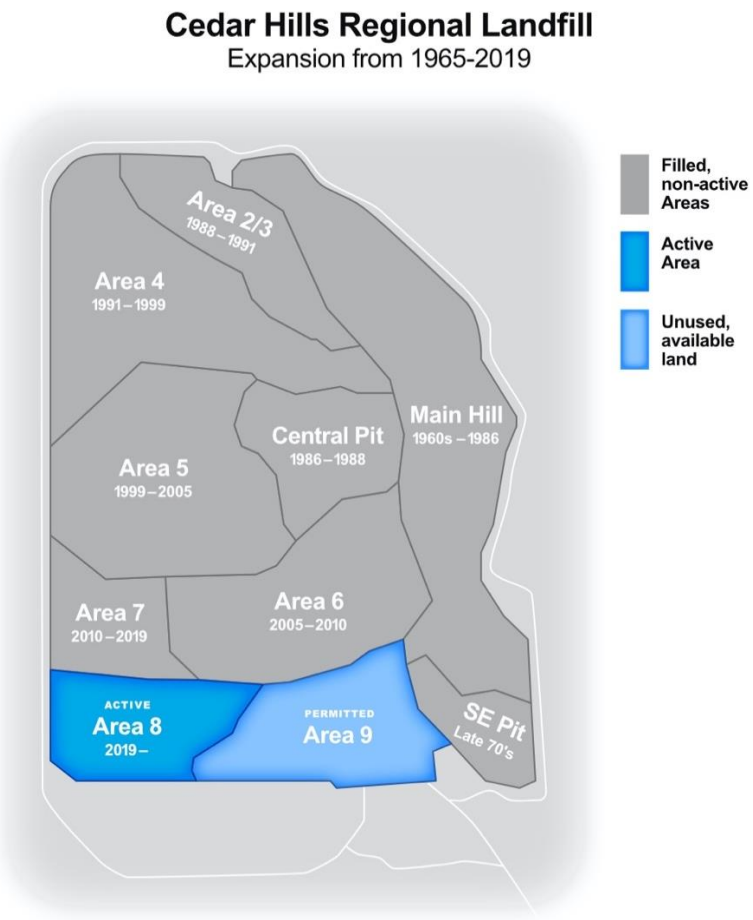


*Figure 1. The history of landfill expansion at the Cedar Hills Regional Landfill*

Figure 2 visualizes the 20-year planning horizon prior to the 2019 Plan. Events in yellow represent plans for landfill expansion along with their estimated closure dates. Events in red and green represent moments when the Solid Waste Division considered landfill

alternatives, specifically waste-to-energy (WTE). Two studies were conducted that did not recommend the County pursue WTE and, more recently, two studies were conducted that did. These later two studies were completed before and after the 2019 Plan was approved by Council, respectively. Below the timeline, the dates of landfill expansion and lifespan of cells 5, 6, 7, and 8 can be seen.

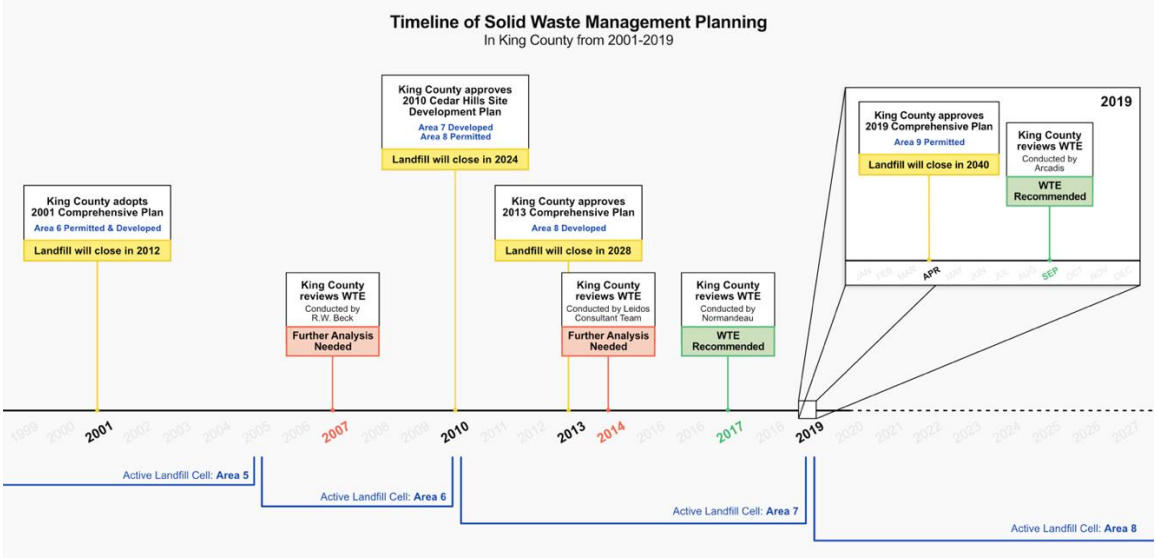


*Figure 2. The history of landfill expansion at the Cedar Hills Regional Landfill*

This precedence of landfill expansion made the 2019 Comprehensive Solid Waste Management Plan ("the Plan") unique in that it gave waste-to-energy (WTE) technologies the most serious consideration to date. King County's Solid Waste Division ("the Division"), the department responsible for developing these plans, began the process of preparing a new Plan in 2016 and define WTE as technologies that "recover energy from municipal solid waste and include both waste conversion technologies and incineration with energy recovery, such as mass burn waste-to-energy, refuse-derived fuel, and advanced thermal recycling" (Solid Waste Division, 2019). The critical

difference from previous planning processes centered on hiring third-party consultants that specialize in waste-to-energy technologies to conduct feasibility analyses on two alternatives: waste export by rail (train) and a WTE facility (Normandeau Associates, Inc., 2017; Arcadis, 2019). To date, these are the only professional studies analyzing whether waste-to-energy is a viable option for the future of solid waste management in King County. These consultant studies, along with prior internal reports, were taken into account by the Division when deciding what action to recommend the County take.

**The 2019 Comprehensive Solid Waste Management Plan**

The Division[1] gave two consulting companies, Normandeau Associates and Arcadis, the following parameters to use for their analysis of alternatives (Solid Waste Division, 2019):

- Maintain a recycling rate of 52% through 2040,
- Use the Division's forecasting for 2018-2028 (which uses variables such as "per capita employment, MSW tipping fee and retail sale"),
- Upper Boundary: assuming aggressive population growth occurs, use an annual growth rate of 2.91% after 2028,
- Baseline Boundary: assuming baseline population growth occurs, use an annual growth rate of 1.73% after 2028,
- Lower Boundary: assuming conservative population growth occurs, use an annual growth rate of 0.57% after 2028,
- Forecast these alternatives using both a 20-year Scenario (2025-2045) and a 50-year Scenario (2025-2075).

[1] For the purpose of this study, waste export by rail will not be considered a landfill alternative because it utilizes landfilling as the disposal method. The only options discussed will be landfill expansion and waste-to-energy.

Normandeau Associates conducted the first WTE feasibility study and concluded that the Division should recommend mass burn WTE technology as a landfill alternative in the Plan (Normandeau Associates, Inc., 2017). From there, Arcadis conducted a second feasibility study that compared mass burn WTE technology to waste export by rail. They concluded that WTE will provide the County gross savings of $4.3 to $7.2 billion (low bound to high bound tonnage forecast) across the 50-year planning scenario (Arcadis, 2019). Other findings conclude that WTE will:

- be advantageous for the County's recycling and energy recovery goals,
- have multiple revenue streams that "lower inflation impacts and protect against future price increases as the County moves further into the planning period",
- require an 8 to 10-year construction period,
- require carbon capture and sequestration technology in order to qualify as a "carbon neutral" or "non-emitting utility source" as mandated by the Washington State legislature.

Arcadis recommended that the Division moves forward with WTE facility planning because of "the long-term cost savings, improved recycling rates, and potential for net negative GHG emissions with the inclusion of carbon capture technology." They deem WTE the most financially stable option of the Division's considerations, which will protect ratepayers from inflation and escalation. Arcadis also notes that the current landfill closure date provides a 10-year opportunity to site a WTE facility, which they suggest goes on landfill property, and a place to dispose the subsequent WTE ash.

The three options the Division chose to consider for the 2019 Plan included 1) landfill expansion, 2) waste export by rail, and 3) a mass burn WTE facility. In the Plan,

landfill expansion would develop a new cell, called Area 9, and increase the permitted height from 800 feet to 830 feet. Under the WTE option, all of the region's waste would instead be directed to a mass burn facility in King County once Area 8 reaches capacity in 2028. The Division ultimately recommend landfill expansion because it will extend the "planning horizon" for the County, take advantage of the Division's 50-year experience with landfill operation, and is consistent with the County's policy to maximize the life of the landfill (Solid Waste Division, 2019).

The Division did not recommend WTE as a landfill alternative for multiple reasons, primarily because the Division considered the technology incapable of reliably and cost-effectively handling the County's total forecasted waste (Solid Waste Division, 2019). The Division found that the County's annual waste tonnage would require a 5,000 ton-per-day system, which would be the largest in the world, and would require a facility expansion after 20 years. This is disputed among the WTE consultants' findings from the feasibility studies. Beyond the referenced sizing issues, the Division says they also did not recommend WTE because it had the highest initial costs, would require a consistent quantity and composition of feedstock, and would have the highest greenhouse gas emissions of the options considered. Although this option was not chosen, the Division says they will commit to continued exploration of emerging technologies to prepare for landfill closure.

**Next Steps Upon Approval of the Plan**

On April 24, 2019, the King County Council voted to approve the Plan, tipping the first domino in a long series of actions with the end result of expanding the landfill

(Regional Policy Committee, 2019). A 2019 Environmental Impact Statement determined that there would not be significant impacts from increasing the landfill's height limit to 830 feet (Herrera Environmental Consultants, Inc., 2019). At the time of this study, the Division has yet to apply for a landfill permit modification with the Public Health Department and site a location for the landfill administration buildings (currently located on Area 9), and then develop the new cell. While the Division develops this new cell, they will also review the latest technologies to prepare for the ultimate closure of the landfill. In 2024 this Plan will be updated to include analyses of future disposal options (Natural Resources and Park, 2019).

**Solid Waste Policymaking in King County**

Thirty-seven cities in King County participate in the County's waste system, including four out-of-county cities and all unincorporated areas (Solid Waste Division, 2018). Only Seattle (the County's largest waste producer) and Milton no longer send their waste to the Cedar Hills Regional Landfill, with Seattle exporting their waste by rail to the out-of-county Roosevelt Regional Landfill and Milton utilizing Tacoma-Pierce County's waste management system and their in-county LRI Landfill. The County provides final disposal of waste at the landfill and these 45 cities contract with the county to provide that service, called an interlocal agreement. The structure of this agreement requires that the Plan has to be ratified by enough cities to represent at least 50% of the County, which provides cities the opportunity to voice their approval or disproval of the Plan. So, if enough cities do not approve of the planned disposal method, they can either lobby the Councilmembers with their recommendation or vote against ratification. The

2019 Plan was ratified by the majority of the cities, with only Snoqualmie formally rejecting it because of their interest in alternatives like waste-to-energy (DeFord, 2019). The process of presenting the Plan to Council and interlocal cities for approval and providing an opportunity for stakeholder engagement and community input before ratification took around one year.

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Many scholarly studies have been conducted to understand local governments' decision-making processes with respect to landfill alternatives, specifically WTE. However, these usually manifest as feasibility analyses testing the viability of technologies and their potential environmental impacts in comparison to other alternatives or landfilling. This makes my research significant because it questions not whether new technologies are feasible, but why decision-makers choose to reject them. It also focuses on a recent case of a local government rejecting WTE in Washington State, a state where another large municipality has operated a WTE facility since 1991 (City of Spokane, 2021). Findings from my research can provide insight into the complex world of King County's decision-making process regarding landfill alternatives, and an understanding of what led them to choose the "business-as-usual" option of landfilling over something new. Hopefully, the research presented here will encourage further inquiry into how solid waste management infrastructure evolves over time, and what it takes to tip the proverbial scales in favor of a new, albeit expensive, system.

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This thesis is organized into six chapters: Introduction, Literature Review, Methods, Results, Discussion, and Conclusion. The Introduction provides a case timeline, the Literature Review establishes a theoretical framework, the Methods chapter details the data I collected, the Results chapter presents my analysis process and findings, the Discussion chapter interprets the findings and contextualizes them with respect to the theoretical framework, and the Conclusion summarizes my research and recommends future research.

# Literature Review

My research asks why King County Councilmembers chose to adopt the 2019 Comprehensive Waste Management Plan ("the Plan"), essentially committing their waste management system to landfill expansion for another 20 years. The purpose of my research is to understand and highlight the complexity of the King County's decision-making process and its subsequent economic, environmental, and social impacts. This case study applies two decision-making theories to municipal waste management decision-making. The chosen theories and model are described in this chapter, as well as how these apply to the case of waste management.

## Decision-making Theories: Rationalism, Incrementalism, and the PESTE Model

In trying to understand the "how" and "why" of political decision-making, it is valuable to understand process theory. Abstract process theory can delineate into the midcentury public administration approaches of rationalism, incrementalism (Lindblom, 1959). The **rationalism** approach to decision-making assumes that an actor, with a specific goal in mind, chooses how to act based on what is the most likely means to achieving that end, and defines a "good" policy as one with the most appropriate means to that end. It usually entails a comprehensive, theory-driven, in-depth analysis of policy options and assumes that an actor has access to all of the data necessary to make the most rational decision possible. Using this approach when siting a waste management facility for example, decisions are circumscribed to a limited number of site locations, available technologies, feasibility studies and consultations, and a time frame (Dodds and Hopwood, 2006; Healy, 2010; Petts, 1998, 2001; Solid Waste Division, 2019). Upon

review of these documents, discussions involving decision-makers and their constituents then occur through town hall meetings, educational presentations, opportunities for public comment, and other forms of consultation (Allen, 2007; Carse, 2012; Marres, 2005; Van de Poel, 2008; Solid Waste Division, 2019). The concept that decision-makers act rationally or attempt to "maximize a desired utility under the constraint of belief" has driven an impressive amount of research in the political and social sciences when trying to predict voting behavior (Downs, 1957; Feddersen, 2004; McGann, 2016). A common argument for employing rationalism in waste management-related decisions is that it will protect the "public purse" and ensure fiscal responsibility on the part of the policymaker (Hostovsky, 2005). This economic rationale is showcased in this case study as it pertains to King County's tipping fees, and the priority of the Solid Waste Division to keep them as low as possible for the ratepayer. However, assessing a decision and its relative consequences using a rationalistic approach requires knowledge that is, at best, piecemeal because individual decision-makers have neither the time nor assets to gather all information required to make a "purely" rational choice. Attempting to make decisions more rational can require changes to the institutional structure that negatively impact elected officials and their constituents (Lowi, 1969; Ostrom, 1989; Seidman and Gilmore, 1986; Bourdeaux, 2008).

Previous research has used this framework in the context of municipal waste decision-making. A study about the underlying institutional structure of municipal waste management found that elected officials, confronted by a wide variety of policy issues, are often concerned they do not have enough knowledge to make a "good" rational policy decision (Bourdeaux, 2008). O'Leary et al. describe highly contentious and technical

policy arenas, such as siting waste management facilities, as particularly difficult when it comes to rationalistic policymaking (1998). Their concern is that elected officials may "bog down" in stalemate if policymakers try to employ rationalism while receiving pressure from all parts of the electorate (O'Leary et al., 1998). King County's Solid Waste Division attempts to predict the constantly changing waste environment by forecasting consumption rates, evolving waste composition, and infrastructure demands decades into the future (Solid Waste Division, 2019). However, in Etzioni's words, "a limited universe of relevant consequences" is not possible because decisions are not linear, therefore decision-makers face "an open system of variables, a world in which all consequences cannot be surveyed" (1967). The employment of rationalism in King County's decision to adopt the Plan will be analyzed in later sections.

In accounting for the limited capacity of rationalism, **incrementalism** intentionally reduces the scope of information in order to make decisions. This approach's focus on the short-run can establish a "norm" that dissuades significant variation from past policies, especially when presented with innovation (Etzioni, 1967). An incrementalist approach to decision-making focuses the attention on incremental actions and compares policies through these margins. In Lindblom's definition, "The only values that are relevant to [a policymaker's] choice are these increments by which the two policies differ" (1959). This case study will explore elements of incrementalism in King County's long history of Cedar Hills Regional Landfill expansion.

In the context of waste management, the push for efficiency and reducing costs to the ratepayer contributes to the routinization of the decision-making system, manifesting as small changes to the status quo (Latour, 2007; Hird et al. 2014). A case study of

Kingston County, in Ontario, Canada, found that policymakers do not consider landfill alternatives a pressing issue because landfilling "has become so routine [that it is] entrenched in City budgets and infrastructure and [has] no immediately apparent environmental consequences for the City" (Kingston City Council, 2012; Hird et al. 2014). A proponent of landfill expansion interviewed in another case study noted that expansion became "reasonable as time went on" (Hostovsky, 2005). Taking an incrementalist approach to waste management planning makes it difficult for decision-makers to commit to adopting new technologies (even if they are proven viable), or consider long-term environmental or financial risks (Bourdeaux, 2008; Frant, 1989). One case out of Nova Scotia found that it took reframing solid waste as a valuable economic resource to break their province's established norm and reject landfill expansion (Wagner, 2007). The flaw of this approach is poetically stated by sociologist Kenneth E. Boulding as, "we stagger through history like a drunk putting one disjointed incremental foot after another" (via Etzioni - Boulding, 1964).

Incrementalists ask how a decision can be defined as "good" if values cannot be universally scaled or summarized. Based on work by David Osborn, Etzioni suggests that an informal scaling of values using an ordinal scale can achieve such a summary (Etzioni, 1967). This employs a ranking system to assess the value an actor places on a qualitative variable of the decision-making process. I will be using informal scaling to measure political values and assess the hierarchy of values employed by decision-makers when they voted on the Plan. Guy (1984) explains that when measuring political values on a scale, a researcher should expect participants to be reluctant to assigning quantitative numbers to their preferences because their feelings are relative. Therefore, a participant's

ranking may change depending on the case presented, known uncertainties, and simply the time they made the ranking.

There is little prior research on what U.S. policymakers consider their priority values when making waste management-related decisions, not to mention how they would rank these values. A case study from Stockholm ranked selected influence factors by the degree to which they affected the choice of decision-makers when considering incineration and fermentation. After conducting interviews with employees of The City of Stockholm Waste Management Administration, they concluded that national legislation, [facility] capacity, potential revenue, and risks to public health and the environment were the most influential factors to these decision-makers (Li, 2007). The **PESTE** (Political, Economic, Social, Technological, and Environmental) model provides a set list of categories to consider and is frequently used in strategic business management, future analysis, and environmental scanning (Hurmekoski et al., 2013; Zalengera et al., 2014; Fozer et al., 2017). A study about decision-making within forest industry companies employs this model to establish a macro-perspective of the decision-making environment (Senko and Pykäläinen, 2019). Using a point system, these researchers asked experts within the industry to suggest actions that would contribute to the long-term, sustainable development of forestry in Karelia, Russia and categorized them within the PESTE framework. They found that experts ranked these categories in the following order (most important to least): Technology, Political, Economic, Social, and Environmental (Senko and Pykäläinen, 2019). In the context of my study, I will adopt the PESTE model and expand it to include Waste Quality and Quantity in order to categorize waste-related factors. I will also be asking each participant to rank these

categories themselves by order of importance. Through this study I will address the differences and similarities between Councilmember's values within the solid waste decision-making environment.

A large amount of research speaks to the impact of citizen input on policymaking and environmental decision-making, mostly about situations where the public has little to no impact (McCann, 2001; Alkadry, 2003; Lando, 2003; Adams, 2004), few where public involvement did affect the decision (Rowe and Frewer 2005; Beierle and Cayford, 2002), and what inspires public assembly around waste-related issues (Hird et al., 2014). Research about perception gaps among stakeholders shows that decision-makers operate on incorrect beliefs about their constituents' perception of an environmental resource, and experts judge risk much smaller than the general public (Sjöberg, 1999; Alexander et al., 2018). These findings justify incorporating perspectives from multiple stakeholders to assess the influence of public input on King County's decision to adopt the Plan and the differences between perspectives about their current waste management system.

Using this literature, I frame my research into King County's decision-making process regarding landfill alternatives using the decision-making theories of rationalism and incrementalism. I also apply the PESTE model to my research. This approach will allow me to draw conclusions about my research questions.

# Methods

This thesis analyzes why King County voted to adopt the 2019 Comprehensive Solid Waste Management Plan ("the Plan") and what factors led Councilmembers to make this decision. I am essentially asking why Councilmembers approved a plan that committed them to landfill expansion for another decade and how they prioritized their values when making this vote. My goal is to better understand why some Councilmembers voted for the "business as usual" option of landfill expansion while others used voted for an alternative. To conduct this analysis I use exploratory, qualitative single case study methodology by conducting semi-structured interviews, content analysis of news articles, and mapping of air quality complaints. In this chapter, I discuss why I chose case study design as my research method and how I structured my research questions within this method. I then explain how I collected my data and how I plan to analyze it. This chapter will conclude with a note on Spokane's role in my research and a summary of methods discussed. Through this research, I hope to gain a rich understanding of the process, experience, and impact of solid waste policymaking regarding landfill alternatives.

## Why a Case Study?

I chose the case study research method to explore the municipal decision-making process at a county-level when considering landfill alternatives. This method provides the opportunity to systematically explore complex social phenomenon and understand the contextual conditions pertinent to my case (Yin, 2018, p. 15). This case study is oriented in a relativist perspective that acknowledges the existence of multiple realities among the

individuals interviewed (Yin, 2018, p. 16), and a constructivist approach that finds the construction of meaning around a phenomenon to be unique to the experience of the individual (Charmaz, 2006). From such vantage, the multiple perspectives of participants involved in this study is allowed to illuminate the topic. Furthermore, the case study method provides a framework for collecting, analyzing, and triangulating multiple sources of qualitative evidence, including documents, open-ended interviews, regional news media, and public comments and complaints. This process will support, parallel, or reject the theoretical concepts referenced in the literature review, or clarify new concepts that arose upon completion of the case study (Yin, 2018, p. 38). Above all, case study methodology allows for gaining a rich qualitative understanding of the process, experience, and impact of municipal decision-making and solid waste policy development.

Case study methodology lends itself to research about public administration and decision-making because by allowing the researcher to retain a holistic and realistic perspective while exploring a specific case in-depth. Yin considers this method relevant when considering a process's development and why it led to a certain outcome (Yin 1984, p. 18). Part of the policy-making process involves discrete, qualitative events or actions that cannot be obtained from survey design, archival analysis, or quantitative feasibility analyses alone (Arganoff & Radin, 1991, p. 205). When assessing multiple policy options and their respective consequences, Kaplan suggests that "storytelling" can provide the medium necessary to "explain the development of current dilemmas, and point the way to resolutions" (Kaplan 1986, p. 775). Further, this research method is appropriate for exploring the "why" of a contemporary circumstance where the

researcher has little or no control (Yin 1984, p. 18). Therefore, case study methodology is appropriate for answering the "why" of King County's vote on the Plan because it allows for holistic analysis, exploratory "storytelling", and a greater understanding of the qualitative actions taken by King County Councilmembers to make this decision regarding landfill alternatives.

This research uses an exploratory single case study focused on King County's municipal decision-making process around solid waste management. After being notified in 2016 that their landfill would reach capacity in about a decade, King County began a four-year process of analyzing the available options. The nine King County Councilmembers were presented with three options: expand the last landfill into its final cell, export waste by rail to a landfill in another county, or invest in new waste-to-energy (WTE) infrastructure. In April 2019, the King County Council voted 5-2 to adopt the 2019 Comprehensive Solid Waste Management Plan ("the Plan"), thus committing to landfill expansion rather than investing in a new waste-to-energy facility. In the context of this study, decision-makers are defined as the King County Councilmembers in office at the time the Plan was being developed (Solid Waste Division, 2019).

**Research Questions, External Data, and Qualitative Factors for Analysis**

There are two research questions guiding this study.

Q1: Why did King County vote to adopt the Plan, essentially choosing landfill expansion over a landfill alternative, specifically waste-to-energy (WTE)?

Q2: What factors led King County Councilmembers to make this decision?

The context of this case is defined using background information I obtained, which is restricted to the following reports and studies used and/or produced by King County in the decision-making process:

- "Waste-to-Energy (WTE) Options and Solid Waste Export Considerations" (Normandeau Associates, 2017)
- Cedar Hills Regional Landfill 2019 Annual Report (Solid Waste Division, 2018)
- "Residential Curbside Characterization" (Cascadia Consulting Group, 2018)
- "Waste-to-Energy and Waste Export by Rail Feasibility Study" (Arcadis, 2019)
- "Final Environmental Impact Statement" (Solid Waste Division, 2019)
- "2019 Comprehensive Solid Waste Management Plan" (Solid Waste Division, 2019)

Upon reading these documents, I concluded that the background information provided to Councilmembers to assist or direct their vote could be categorized into six overarching factors. I will explore this vote within the framework of these categories in an attempt to understand which of the factors had the most influence on decision-makers' vote. The six factors I chose to frame my analysis in are:

1. *Economics:* the financial impacts of the decision.
2. *Environment:* the conditions, assets, and vulnerabilities of the regional environment.
3. *Politics:* the political climate and culture.
4. *Social:* the "attitude" of constituents in each district.
5. *Technology:* the technologies available for consideration.

6. *Waste Quality & Quantity (WQQ):* the conditions of the current solid waste management system.

**Data Collection**

The process of collecting and analyzing the three sources of data used (semi-structured interviews, news articles, and air quality complaints) will be discussed in this section.

Interviews

My primary source of data collection involves semi-structured, open-ended interviews with participants relevant to solid waste policy-making. Participants interviewed include Councilmembers, County Staff, a WTE Consultant, and King County residents. My goal with these conversations was to gain insight into the differing perspectives of solid waste management techniques and municipal decision-making. When speaking to King County Councilmembers, this evolved to inquire about their experience voting on the Plan, what factors contributed to or impacted their decision, and what they wish for King County's solid waste management system. There was little concern for researcher bias related to voter districts, since I reside in a separate county and do not contribute to the Councilmember's voter base.

To recruit participants, I first emailed an explanation of my research goals and a request to participate. After accepting my request, I sent participants a letter further explaining the intent of my study (see Appendix A), a consent form (see Appendix B), and the list of interview questions for review (Appendix C). I offered participants the opportunity to skip questions or end the interview at any time. I conducted interviews via

Zoom and phone calls, using a separate device to record the audio and a notebook to note themes or patterns that emerged in the conversation. Interviews lasted from 55 minutes to almost three hours. Only one participant chose to respond to questions in writing. In total, I conducted 14 interviews: 10 via Zoom, 3 via phone, and 1 in writing. I spoke with 3 King County Councilmembers, 2 King County staff, 3 King County residents (residing within one mile of the landfill), 1 King County WTE consultant, 2 Spokane landfill and WTE engineers, 2 former Spokane employees, and 1 current Spokane employee. Once completing an interview, I saved the audio recording in a password-protected folder on my laptop and began the transcription process.

To structure the interviews, I begin with providing background information defining the boundaries of my study (i.e. the phenomenon, definition of WTE technologies, and definition of decision-maker). The first four questions inquire about the participant's general experience with and opinion of waste management in Washington State (see Appendix C for full interview protocol). This laid the foundation for deeper inquiry into subject areas I couldn't access through other forms of data collection, specifically public opinion of municipal decision-making processes and landfill alternatives (i.e. WTE).

A major component of the interview process was asking participants to rank a set of factors by how important each factor was the decision-making process. As mentioned in the literature review, the factors used in this process are drawn from the PETSE framework (Senko and Pykäläinen, 2020), expanded to include Waste Quality and Quantity as a sixth factor. Rather than employ a cumulative voting approach where participants are given 100 points to spend on prioritizing categories (Blair, 1973), I asked

participants to simply rank the six factors in order of importance. Participants ranked each factor on a scale of 1-6 (with 1 being most important), according to how they either perceive decision-makers prioritized these factors when voting on the Plan (if they were not a Councilmember) or, for Councilmembers I interviewed, according to how they remember prioritizing them in their decision-making process. Asking this question within a semi-structured interview setting allowed participants to expound on their reasoning and thought process for prioritizing certain factors over others. With this approach I can better understand why decision-makers voted to approve the Plan and how perspectives differ or relate among the various participants interviewed. This question benefited from "in-person" interviews because of its potential to confuse participants. This is the only interview question that provides some form of quantitative analysis. The open-ended interview format allowed for follow-up questions, which was an important opportunity for clarification or introduction to topics and concepts I had not previously considered.

A Human Subjects Review approval was obtained for the study through The Evergreen State College's Institutional Review Board. Participants were frequently offered the option to remain anonymous, confirmed their consent to be recorded, and told when I began recording. Upon completion of my thesis, I deleted the audio recordings.

Air Quality Complaints

In addition to the interviews, I also collected and mapped air quality complaints filed by residents of King County. This is a valuable source of candid public comments/opinions regarding the current waste management system, specifically the Cedar Hills Regional Landfill (CHRL). The Puget Sound Clean Air Agency (PSCAA) is

a public agency responsible for recording and processing public complaints regarding air quality in King County ("File a Complaint"). Filing a complaint is available online, via phone, and by mail. All complaints become public record once filed and are provided upon request.

I filed a public records request for access to complaints that met the following characteristics: it references the "Cedar Hills Regional Landfill" or anything adjacent, the resident lives within a 10-mile radius of the landfill, and complaints regarding odor, dust, or "business - visible emissions". I received 2,082 records in one installment that had records beginning May, 1994 and ending September, 2020. I coded these records for the complaint "types" defined by PSCAA, which include odor, noise, and dust. I made special note of any complaints that lead to legal action or negative impacts on public health or quality of life for the complainant. I also recorded whether an action was taken by a PSCAA Agency Inspector regarding the complaint. This could mean calling the complainant to discuss their concerns via phone, traveling to the site of the alleged complaint to inspect its validity, or contacting the alleged manufacturer of the air quality concern (in this case the landfill) to inquire about their operations. Since these filings also contain the address and time of the complaint, I documented this for further analysis using mapping software (ArcGIS). Through this data collection I can analyze the impact landfill operations have had on neighboring residents since a filing system became available, describe the government structures in place to manage these impacts, and infer a general public opinion regarding the continued use of CHRL as a means of final disposal in King County.

News Articles

The purpose of this data collection is to explore the scope and tone of news coverage in King County regarding the topic of landfill expansion and WTE consideration. Through this process, I assessed the level of each news outlet's topic exposure to their respective audiences. Coding is a heuristic analysis method, and thus fits well with the exploratory structure of this case study. The Pew Research Center defines this pursuit as "assessing the way in which a story's content is constructed via use of quotes, assertions or innuendo, which results in supportive, neutral or negative coverage" ("Human Coding of News Media"). A coding key is created to provide the platform for documenting these elements of a story's content. As defined in *The Coding Manual*, "a code...is often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute" (Saldaña, 2015). The coding key I developed uses the proposed six factors as overarching categories to organize codes within. I concluded what codes to include in my analysis through past research on the topic. I also saved direct quotes I considered evocative of a potential tone or theme. To read the coding key used in this study, see Appendix D.

I sourced 35 relevant news articles using the research database NewsBank. The keywords I used to find these articles included: *King County, landfill expansion, waste-to-energy, waste management, Cedar Hills Landfill, Cedar Hills Regional Landfill, Maple Valley, Eagles, Public Comment, Residents,* and *solid waste*. The search was restricted to the years 2016-2019 because this was the time range given for King County to consider the discussed disposal options. Using Microsoft Excel, I read the main body of each article and manually recorded which articles directly addressed codes from my

coding key. During this process I also saved memos to another Excel sheet to keep track of emergent themes for later analysis.

## Analytical Approach

### Ground-Up Coding

I used ground-up coding in my analysis of all the data collected. Ground-up coding involves analyzing the qualitative data collected for overarching themes and patterns, which can lead to new concepts or relationships emerging (Yin 2018, p.169). The chosen six factors act as a preliminary theme structure from which deeper abstractions or interests related to the original inquiries can emerge.

### Developing a Case Timeline

This analysis will result in concepts and possibly new themes or connections, all of which will direct the second inductive analysis strategy: developing a case timeline. Here I will attempt to identify the timeline of decisions made by King County officials leading up to the vote, develop a model of King County's solid waste policy-making structure, and place the six factors within this model.

### Process-tracing

The final stage of analysis employs the explanation building technique to gain a rich understanding of the phenomenon within its context – in this case, the decision around landfill options in King County. A method specific to political science research, called process-tracing, strives to approach a more intimate vantage point with which to

observe the mechanisms behind the phenomena (George & Bennett 2005, p. 108). Process-tracing attempts to posit "which aspects of the initial conditions observed, in conjunction with...the many that may be at work, would have combined to generate the observed sequence of events" (Goldstone 1991, p.50). The result of this analysis will be hypothesis generation based on these observations. In following with case study research, this analysis can only conclude with generalizations and deeper insights based on the specific case study in question. The value of this study design is similar to that of a history degree; it can't predict the future, but it can provide a clearer window with which to see the world.

**Evaluating Strength of Results**

The criteria for interpreting the strength of these results will consider whether the logic of choosing the six factors remains sound. A sign of success will be whether the six factors contribute to the development of the policy-making structure. If this does not occur, the original proposition will need to be revised and another case study will be recommended.

**A Note on Spokane's Role in this Case Study**

Spokane, a city in Eastern Washington, currently employs a mass burn waste-to-energy (WTE) facility as their primary option for solid waste disposal. Being that this is a single (versus comparative), case study, Spokane will play a specific role in the analysis. I found that, in certain ways, it was easier to recruit people from Spokane for interviews. Each of these interviewees contributed in different capacities to the 1989 decision to

integrate WTE into Spokane's solid waste management system. There could be many reasons for their availability and willingness to participate in my research. But, given that Spokane is the only city in Washington State that currently operates a WTE facility, I found value in hearing their thoughts on municipal decision-making. I used the same list of interview questions for both the Spokane and King County participants, so their responses will be used to infer a deeper understanding of the solid waste policy-making structure in King County. I did not conduct any other research into the Spokane decision (i.e., coding news articles and mapping public air quality complaints), but the potential for this to become a comparative case study will be discussed in my conclusion.

**In Summary**

In this case study I will apply a holistic lens to a specific moment in King County's solid waste management history, looking through the window into the very complex world of municipal decision-making. By interviewing decisionmakers directly involved or impacted by these decisions, I intend to deepen my understanding of the commonalities and differences between perspectives. In lieu of a survey, I will use air quality complaints about the Cedar Hills Regional Landfill to provide context on the current waste management system's impacts on King County residents. By coding regional news articles, I will better understand the scope and tone of coverage regarding the County's decision in various news outlet. When combined, I will draw conclusions to paint the "big picture" of waste management in King County and highlight the complexity of the regional decision-making process and its subsequent economic, environmental, and social impacts.

# Results

This chapter describes my results for the data collected on municipal decision-making in King County regarding landfill alternatives. The first section summarizes the results from coding news and opinion articles, the second section details the results of mapping air quality complaints, and the final section synthesizes the results from the interviews. I will first describe the analytic procedure used, then will present the results.

## Coding News and Opinion Articles

### Overview

I coded 35 news and opinion articles in order to understand the scope and tone of coverage from regional and domestic news outlets regarding King County's 2019 Comprehensive Waste Management Plan ("the Plan"). I conducted my analysis with 53 codes using predominantly iterative coding to allow for new variables to be derived from the data. The majority of these articles (33) were published within King County, the remaining (2) articles were national online publications. Each of these articles discussed the Plan and decision in some capacity. The median word count was 841, the longest article was 3,788 words, and the shortest article was 196 words. Almost all of the articles were written during the decision-making timeline (2016-2019), with one written during the 1999 decision-making process. The result of this analysis is a better understanding of how this topic was framed in the news during the decision-making process.

Results: Tone

The tone of the majority of articles coded (32) was neutral. Of these articles, none expressed an opinion for either landfill expansion or WTE outside of direct quotes by residents, WTE consultants, or King County officials. Of the remaining (3) articles, one was an opinion piece published in The Kent Reporter and two were letters to the editor in The Auburn Reporter and Federal Way Mirror. The opinion piece was written by a King County resident who lives within 2 miles of the Cedar Hills Regional Landfill ("the Landfill"), and was in favor of WTE. One letter to the editor was written by a waste-to-energy (WTE) Consultant who consulted for King County on the 2017 WTE feasibility study and was also in favor of WTE. The other letter to the editor was written by a King County resident who was a member of the Solid Waste Advisory Committee (SWAC) during the decision-making process and is in favor of landfill expansion.

Results: Scope

To analyze the scope of coverage in these articles I used 53 codes, which I then fit within my interpretation of the PESTE framework (Politics, Economics, Social, Technology, Environment, and I include Waste Quality and Quantity). The majority of my codes (35) were binary, meaning a code/subject was either discussed or not discussed in the article. The remaining codes (18) had three options/variables to allow for deeper analysis of and comparisons between the two disposal methods under analysis (landfill expansion and WTE), and a "did *not* discuss" option. An example of a binary code is shown below: "WQuant" refers to an article that was coded either 1 for "…did discuss the quantity of waste produced annually in King County?" or 0 for "…did *not* discuss…"

| | | |
|---|---|---|
| **WQuant** | Does the article, letter, or opinion piece discuss the **quantity of waste produced annually in King County**? | 1 = Yes<br>0 = No |

An example of a non-binary code is "SocPref," shown below, so an article was coded either 1 for "…did discuss a King County resident preferring WTE", 0 for "…did discuss a King County resident preferring landfill expansion…", or 99 for "…did *not* discuss a King County resident's preference".

| | | |
|---|---|---|
| **SocPref** | Does the article, letter, or opinion piece discuss or quote **actual King County residents preferring a specific option**? | 1 = WtE<br>0 = Landfill Expansion<br>99 = N/A |

Under my analysis, a "…did discuss" code means an article did provide that information; therefore, the scope is considered to inclusive of that information. The majority of the "did mention" codes (68%) occurred in less than 10% of the articles. Of that content, 31% of these codes were categorized within "Economics". Under my analysis, a "…did *not* discuss" code means an article did not provide that information; therefore, the coverage of that information is considered to be limited. The majority of the "did not mention" codes (33%) occurred in over 90% of the articles. Of that content, 43% of these codes were categorized within "Social".

Codes-to-Themes Model

From this coding analysis I developed "outcomes" that evolved codes into categories and themes. As defined by Rossman and Rallis (2003), "think of a category as a word or phrase describing some segment of your data that is explicit, whereas a theme is a phrase or sentence describing more subtle and tacit processes." I derived three major

themes from this process: the news' portrayal of public opinion and government opinions.

*The Portrayal of Public Opinion in the News*

The first theme I derived from the data is the public's opinion of the Plan. Shown graphically in Figure 3, the primary category for this theme are the residents who live around the landfill (referred to as "landfill neighbors") because they were the only members of the public quoted in the collected news articles. This category delineates into the subcategories of landfill neighbors that approve or oppose of the Plan. From there, these subcategories further delineate into the PESTEW factors (Politics, Economics, Social, Technology, Environment, and Waste Quality and Quantity), from which the codes are placed. A large number of references to public opinion addressed people who opposed the Plan. This mostly included residents surrounding the landfill ("landfill neighbor"). The remaining references to public opinion addressed members of the public who approved of the Plan (one landfill neighbor).

Members of the public who opposed the Plan cite impacts to the environment, public health concerns, and disamenity affects resulting from landfill expansion (LX) as their main concern. In the context of this research, an environmental disamenity affect is defined as, "a 'nuisance' caused locally as a result of the presence of landfill. It can be characterized by noise, dust, litter, odor, presence of vermin, visual intrusion and enhanced perceptions of risk" (COWI, 2000). They expressed having support or at least some interest in WTE as a method for final disposal. They expressed having distrust with the intentions of King County Council (KCC) and the Solid Waste Division (SWD) about

their decision to approve the Plan. A resident who lived by the landfill wrote an op ed that approved of the Plan, specifically landfill expansion, because of his concern that landfill alternatives will have a negative economic impact on ratepayers. He argued that economics should direct the Councilmembers' decision.

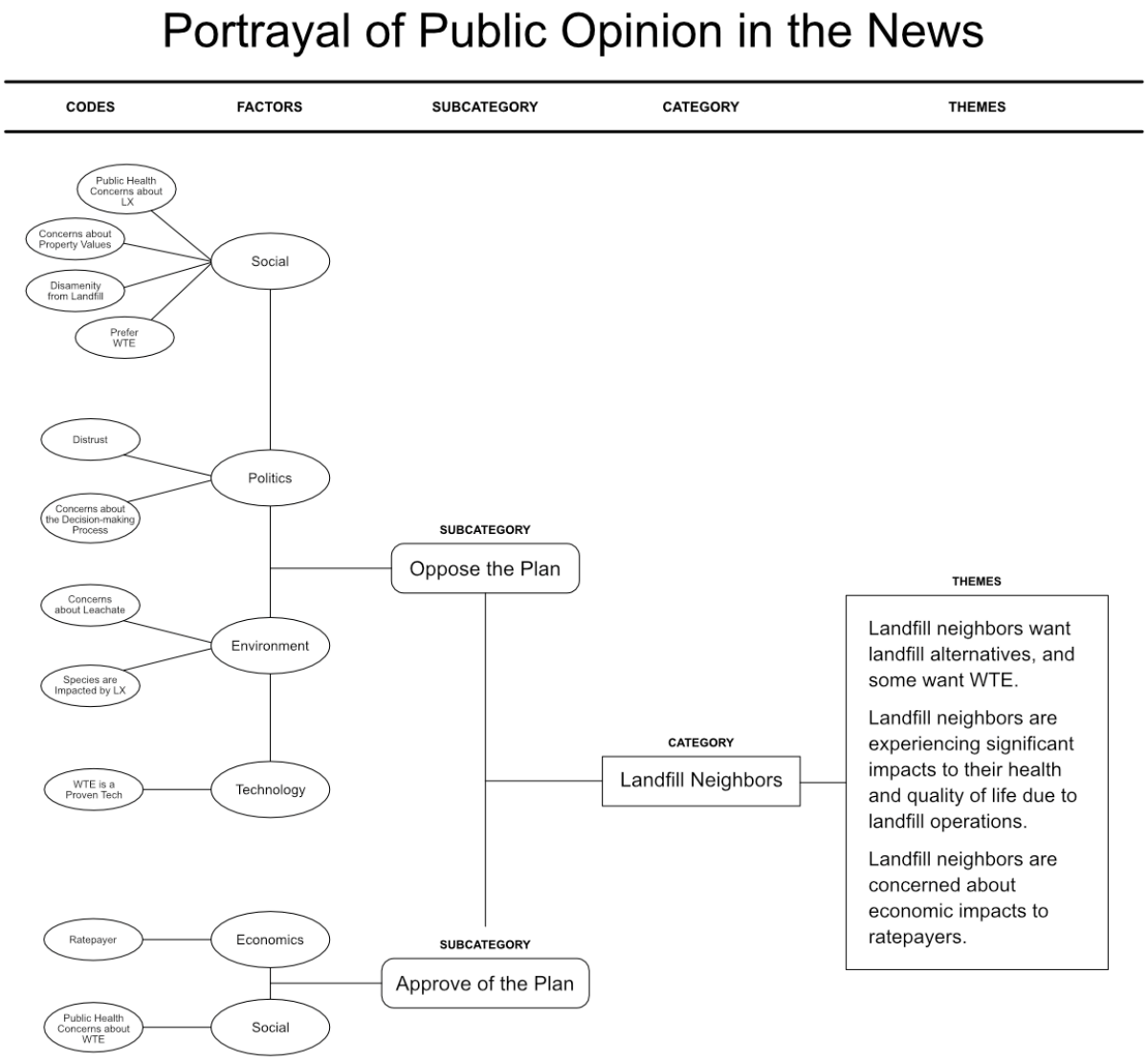


*Figure 3. Code-to-Themes model for the portrayal of public opinion in the news*

*The Portrayal of Government Opinion in the News*

The second theme I derived from the data regarded the government's opinion of the Plan. Shown graphically in Figure 4, the categories for this theme include King County Councilmembers, members of the Solid Waste Division, and elected officials from cities in the interlocal agreement ("Local Leadership"). Each of these categories delineate into the subcategories of "Approve of the Plan" or "Reject the Plan". From there, these subcategories further delineate into the PESTEW factors (Politics, Economics, Social, Technology, Environment, and Waste Quality and Quantity), from which the codes are placed. The majority of references to government opinion addressed the Solid Waste Division's reasons to support of the Plan. The next most common reference addressed Councilmember opinions for both approving of and opposing the Plan. There were few references to Local Leadership addressing why they approved of or opposed the Plan.

Councilmembers that opposed the Plan were portrayed as considering landfilling archaic and WTE cutting edge technology, feeling that a localized waste management system ensures their system's resiliency (i.e. they don't want to rely on export-by-rail), and worrying that landfill expansion (LX) is a "missed opportunity". Councilmembers that approved of the Plan acknowledged that landfill neighbors are concerned but considered landfill expansion the best option "right now" for the benefit of the whole county. Solid Waste Division (SWD) officials considered WTE viable but not the best option right now, mostly because it's "the most expensive option". The Division intends to "keep eyes on WTE technologies" for future consideration, but wanted to prioritize diversion over disposal. They also saw landfilling as a waste of materials (a "pit") but

necessary in order to extend their "planning horizon". Most local leadership approved of the Plan, saying that King County needs more time and information to make a final decision about the next method of waste disposal, so landfill expansion was the best option for now. Bellevue mentioned that they approved because the SWD recognized their constituent's public comments and made relevant amendments to the Plan. Local leadership that opposed the Plan used their vote symbolically to show that they want landfill alternatives and don't agree with the SWD's "casual dismissal" of WTE in the Plan.

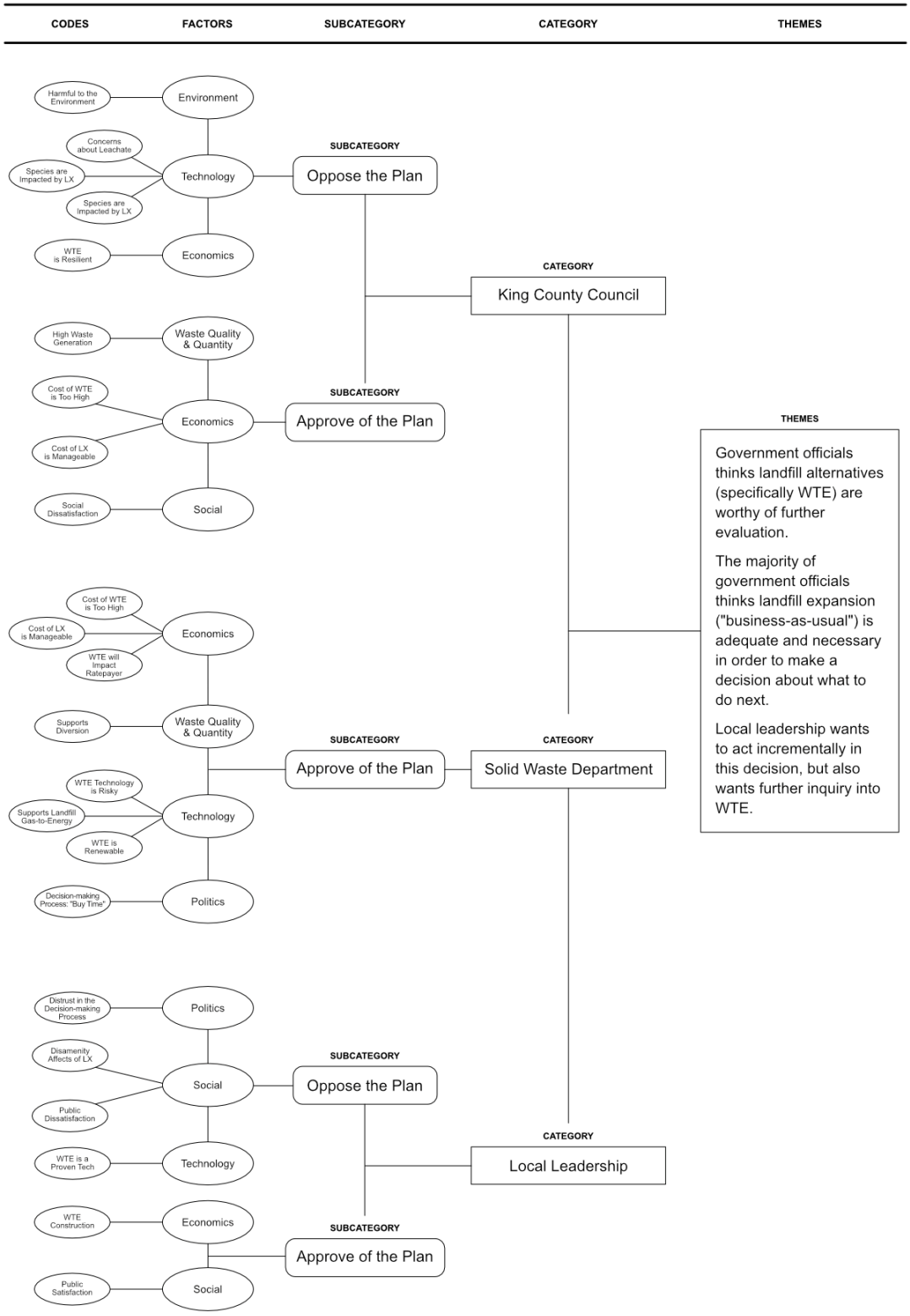


*Figure 4. Code-to-Themes model for the portrayal of government opinion in the news*

## Air Quality Complaints (AQC)

### Overview

I documented 2,082 Puget Sound Clean Air Agency (PSCAA) air quality complaints in order to better understand the history of disamenity affects that the Cedar Hills Regional Landfill ("the landfill") has had on King County residents. Disamenity has been defined in waste management-related research as adverse impacts to quality of life from landfill operations, such as noise, visual intrusions, odor, wind-blown litter or dust, animals, and "stigma damages" to property values (Ham et al., 2012). By mapping these complaints over time, I can visualize the distance, frequency, and type of recorded disamenity affects.

### The Government's Role

I divided my analysis into two roles based on the "conversation" being had regarding air quality issues and concerns: the government ("Inspectors") and the public ("complainants"). The government's role is defined by the breakdown of votes on the 2019 Comprehensive Solid Waste [2]Management Plan ("the Plan"), and the process in place to respond to AQCs.

[2] An important note regarding this research: all of the data I analyzed is based on the records I received from PSCAA. I was not told what percentage of total records this represents, so I can only make inferences about the records I received.

*Breakdown of Vote by District*

The five districts that voted to approve the Plan did not record any AQCs during the period of time analyzed (Solid Waste Division, 2019). These districts and their respective representatives are:

- District 1: Rod Dembowski (Democrat)
- District 4: Jeanne Kohl-Welles (Democrat)
- District 5: Dave Upthegrove (Democrat)
- District 6: Claudia Balducci (Democrat)
- District 8: Joe McDermott (Democrat)

The two districts that voted to reject the Plan are the only two that recorded AQCs during the time period analyzed. These districts and their representatives are:

- District 3: Kathy Lambert (Republican)
- District 9: Reagan Dunn (Republican)

The two districts that did not vote also did not record any AQCs during the time period analyzed. These districts and their representatives are:

- District 2: Larry Gossett (Democrat)
- District 7: Pete von Reichbauer (Republican)

Of the districts that recorded AQCs, District 9, where the Cedar Hills Regional Landfill is located, held over 99% of the records. District 3 held two records.

*The Government's Response Process*

Once a resident notifies PSCAA of an issue, a case is filed that documents the date and time it was received, the type of issue reported (options included asbestos, burn ban, chimney smoke, dust/fallout, gas station, gas tester/installer, mobile coater, odor, outdoor fire, visible emission, and other), the type of action taken (none, contact, or offsite contact), the complainant's contact information (name, address, phone/email), and "comments" or description of the event or experience.

From these records I learned that in order to confirm the presence of odor, a PSCAA Inspector or Cedar Hills Regional Landfill representative needs to travel to where the complainant claims the nuisance is located, called an "offsite contact". One resident who lives within 1,000 feet of the landfill (a "landfill neighbor"), received this email explaining the response process in response to their complaint:

> *"We take odor complaints very seriously when applying our regulations which state that it is against the law to emit any air contaminant that unreasonably interferes with enjoyment of life and property. This means we must independently verify the presence of an odor to characterize its unpleasantness using our noses. Once on site, our inspector must be able to detect an odor that is distinct, definite and unpleasant, and be able to trace the odor back to its source with the complainant willing to complete a formal complaint form and to testify should there be an appeal. We also prioritize our field responses based on the number of complaints received and likelihood of the smell still being present. I hope this is helpful in understanding the process and evidence needed in support a documented odor violation."* (Case #2015501518 – 1; July 8, 2015)

Another requirement to filing a complaint is that the complainant can only define the location as a private address. In another case, it was described as, "This complaint

specifically stated, ‘Cloud of Gas on 156th st and Cedar Grove Road. Got headache, sore eyes, nose and sore throat from driving through it.’ Typically, PSCAA does not respond to ‘transient’ complaints when the issue is not at a complainant's home or workplace” (Case #2014500643 - 1; May 17, 2014). This removes the ability to file a complaint regarding air quality issues on public property, like while driving or walking on a sidewalk. About 11% of the complaints were responded to by either a phone call or offsite contact. Often, when a complaint was acted on with an investigation, an Inspector visited the location days, weeks, or even months after the complaint was filed. One complainant (referred to in this case as “CP”), expressed concern about this to the Inspector, “I arrived at CP location and detected no odor. I called CP and advised. CP was upset that it took 4 hours for an on-site response. I advised this was a fast response.”

The Public’s Role

The public begins the process of filing a complaint by providing the location, frequency, and context of issue experienced to PSCAA in the form of a telephone call or online submission. Figure 5 displays the location and frequency of complaints across the timeline of records provided. The majority of complaints were located within two miles of the landfill, and specifically west of the landfill in Maple Hills, Washington. The farthest complaints were recorded in Newcastle, Washington, about 13 miles away. From the installment I received, the number of complaints per year ranged from one complaint in 2005 to 482 complaints in 1997. There are noticeable decreases in AQCs during the years 2000-2001 (16 total complaints) and 2004-2007 (40 total complaints).

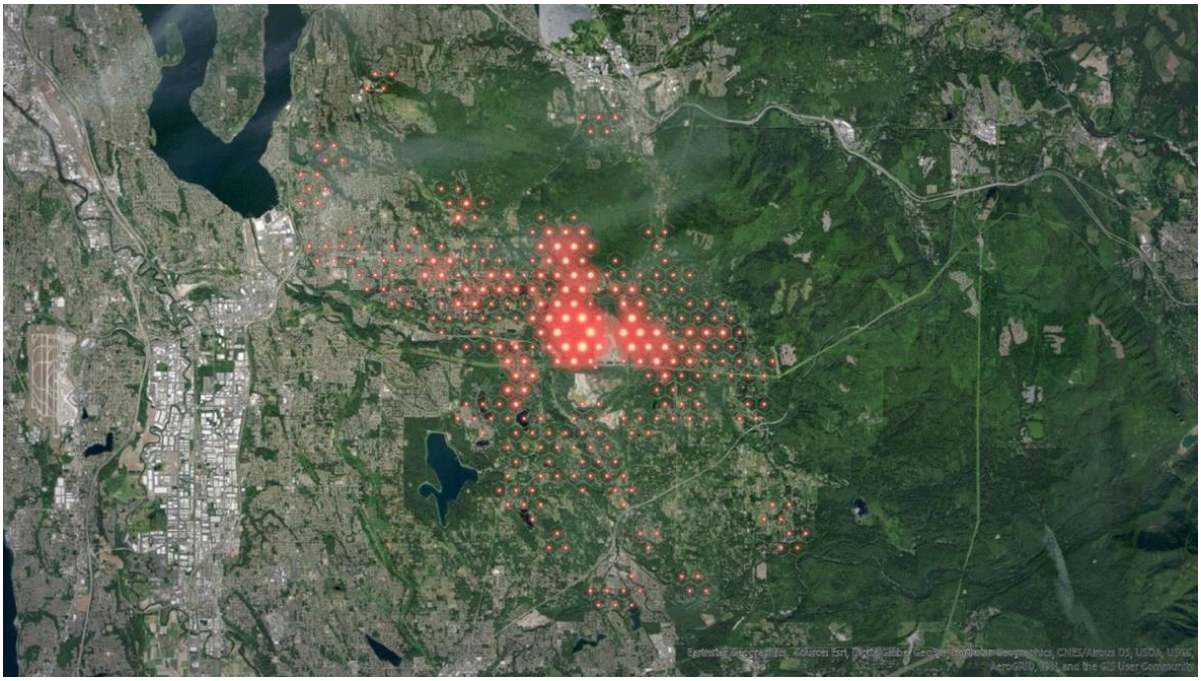

*Figure 5. Map of Air Quality Complaints from 1994-2020*

*Disamenity Affects, Public Health Impacts, and Property Loss*

Disamenity affects in this section of analysis is defined by the type of issue listed in the original case file. From the list referenced earlier, the only issues listed in this installment of records were for odor, noise, and dust. The majority were for odor (2,056), then noise (24), and dust (2). Complainants can list multiple issues in their case and 22 complaints listed both odor and noise, and one listed odor and dust. Odor complaints were described as “gassy”, “terrible”, “overwhelming”, “not breathable”, “blueberries and diarrhea”, “a chemical cocktail”, and “garbage in hot black plastic bags”. Multiple complainants referenced disamenity affects from seagulls and eagles dropping waste on their property (roof and yard), construction noises or waves of odor (most commonly described as “leachate” or “methane”), waking them up at night, and concerns about property values. One complainant said, “I'll never be able to sell my house unless it’s the dead of winter and pouring outside” (Case #2017502441 - 1; July 26, 2017), and another,

“Once again the disgusting Cedar Hills Landfill odors have woken up my family and has filled the entire house! I regret buying our home, had no idea how often and nasty this would be. This is now happening twice a week!!! Something needs to be done” (Case #2017501876 - 1; June 28, 2017). Both of these cases were evaluated and deemed to require no action from either PSCAA or the landfill.

Public health impacts in this section are defined by the comment section of the case file. From this section I learned that complainants expressed concern, outrage, stress, and fear over the impacts they attributed to the landfill. The most common physical reactions to landfill-related odor issues included “burning sinuses”, “headaches”, “nausea”, “asthma attacks”, and a “tight chest”. Multiple cases mentioned having to abandon their home to seek relief from these affects. One complainant mentioned concern over the long-term impacts the landfill could be having on her physical health, saying “I have allergies to mold, and they are getting worse. I have increasing asthma. I'm quite sure those two facilities are spewing mold into the air. The neighbor behind us has a dog that just died of cancer, and she has it also.” I noted many comments from the perspective of parents or teachers in the Maple Hills school district speaking about being fearful for that their children’s health will be impacted from landfill impacts. One complaint said, “Nauseating smell by Maple Hills Elementary. This is a nearly daily occurrence and totally unacceptable. How can these children reach their academic potential if the smell of their school puts them off of their lunch? Have a conscience please.” I mapped the locations of vulnerable populations referenced in these complaints as including three schools, two parks, one wedding venue and Christmas tree farm, and

one rehabilitation facility called Passage Point (which is located within the landfill buffer). All of these locations reside within 2,000 feet of the landfill.

In December 7, 2013, a pipeline connecting the landfill's North Flare Station to the Bio Energy Washington landfill gas-to-energy plant broke and released methane gas eastward into the surrounding neighborhood (Cedar Hills Regional Landfill Community Meeting, 2014). It took four hours from the time landfill neighbors experienced physical reactions and called the fire department to when the Solid Waste Division arrived and shut the pipeline off. The pipeline remained shut down from December 7 to December 20. A collection of neighbors filed a lawsuit against the County for damages experienced, resulting in a six-year case that settled out of court. Shortly after, the County bought these neighbors' homes and demolished them.


*Figure 6. Map showing distance between the landfill's gas-to-energy plant and a landfill neighbor's "dream home"*

Figure 6 provides a partial aerial-view of the landfill, the location of the Bio Energy Washington landfill gas-to-energy plant, the 1,000-foot buffer zone, and the location of the neighborhood area where the County bought and demolished residents' homes. In an interview I conducted, one neighbor shared his experience as,

> *"We were just about done with our dream home when the [2013] pipeline break happened. It smelled like our neighbor's propane tank had ruptured. We had bright red faces that night, trouble breathing, itchy eyes and throats... We had no idea what was going on. I called the fire department and had them show up at the landfill to see if it was the Bio Energy plant and the gate was locked. The landfill had no clue. My nightmare with the landfill lasted six years from the pipeline break until I was done with the lawyers. The whole street on our side of the landfill, the houses are now gone. The county bought and demolished them."*

This neighbor, along with his partner, no longer live in King County.

*Confusion About Odor Source*

One note from analyzing these complaints is confusion about the source of the odor, especially when complainants appear confused by facility names. There are three other waste and construction sites and one Superfund site adjacent to the landfill: Cedar Grove Composting Facility, Pacific Topsoils Inc. (soil, mulch, and equipment supplier), Quality Aggregates LLC (sand and gravel supplier), and Queen City Farms (previous industrial/hazardous waste Superfund site). Some residents referenced "Cedar Groves Landfill", or "Cedar Hills Compost" as the culprit of odor, noise, or dust. For example, one complainant commented, "Garbage smell in the air. Most likely its rotting compost from Cedar Hills Regional Landfill in Maple Valley." I noted a trend that most

complainants associated the landfill as the source of their odor complaints from 1994-2000, and this changed from 2000-2010 to more composting associations.

Another note is that when an Inspector makes offsite contact, they often do not detect landfill odors from Cedar Hills Regional Landfill and/or refer to the odor as something else. Examples include “compost odor” (most common), “the Hobart Landfill”, “grass”, “livestock”, and “a neighbor’s propane tank”. This has occurred even when on landfill property. For example, after investigating a complaint in December 2013 on the night of the pipeline break an Inspector said, "Upon arrival at the landfill office, I detected a very strong, #3 compost odor. We drove in separate vehicles to the site of the gas line break and while en route I continued to detect compost odor while on the landfill, and I also detected a #1 gas odor while driving atop the landfill" (Case #2013503158 - 1; December 7, 2013). I was not provided a list of odor definitions along with my public records request, however one Inspector’s response to a complaint explains their discretion. Upon arriving to the residence and asking the complainant to describe the odor, “The spouse indicated the odor smelled like ‘garbage’ and thought the landfill was the source. However, when pressed to describe the odor, words such as ‘heavy’ and ‘sickly-sweet’ were used. Those words are typically used when describing compost odor” (Case #2003502017 - 1; November 21, 2003). The Inspector ultimately deemed this issue compost-related.

From these case records it was unclear what occurs after an odor was deemed to be the result of landfill operations. Each report has a space for a case summary to be written, but was rarely descriptive. There were a few cases where the landfill was confirmed as the source of an odor but the case summary suggested otherwise. One case

where a third-party inspector was brought in reported that, “The ERMAS representative stated the odor was from Cedar Hills landfill and was attributable to the north flare station”, but the case summary said, “No verification that odor detected was from [Cedar Hills Landfill]” (Case #2010501155 - 1; January 1, 2012). Another case suggests that odor complaints can be handled by landfill employees, stating that,

> *“The call summary report was authored by Wally Grant [Landfill Gas Supervisor] and noted compost odor upon arrival [to the landfill]. He detected a faint landfill gas odor near Area 6, a location where there has been a documented release of landfill gas at the surface. That detection was intermittent. Grant reported no odor along the east side of the landfill adjacent to the complainant's property. From Grant's written report, there appears to be some mis-catorigization of the odor from the complainant's perspective, based on what Grant reported. I specifically asked if any measurements had been taken. No measurements taken.”* (Case #2014500631-1; May 15, 2014)

This can create a conflict of interest between the Inspector and the odor complaint being investigated, and can contribute to confusion about the source.

## Semi-Structured Interviews

### Overview

I interviewed 10 King County residents regarding their experience with the Cedar Hills Regional Landfill ("the landfill") and the subsequent vote regarding its expansion in the 2019 Comprehensive Solid Waste Management Plan ("the Plan"). I spoke with three Councilmembers directly and received one Councilmember's response via email. I spoke with one of these Councilmember's Chief of Staff and with an unrepresented Councilmember's Policy Advisor on Solid Waste. To gain a non-government perspective, I spoke with three residents who live within 1,000 feet of the landfill ("landfill neighbors") and one waste-to-energy (WTE) consultant who conducted one of the feasibility studies for the Solid Waste Division. The shortest interviews were with Councilmembers, ranging from 19 to 57 minutes. The longest interviews were with landfill neighbors and the WTE consultant, ranging from one hour 16 minutes to one hour 53 minutes.[3] In this section, I will first discuss the PESTEW rank order exercise I conducted with the Councilmembers and relevant staff, then I will discuss themes that emerged across all interviews.

### Rank Order of PESTEW Model

The only quantitative component of my interviews employed my extension of the PESTE model (Senko and Pykäläinen, 2020), which considers Politics, Economics, Social, Technology, Environment, and Waste Quality and Quantity (PESTEW). I

[3] Only a few of these interviewees requested to remain anonymous, but I am applying this anonymity to throughout my analysis. This is in order to respect their privacy, given their more intimate connection to the topic. Additionally, revealing participants' identities beyond the perspective they contribute to this research doesn't add value to the study.

conducted 10 qualitative interviews, including: 4 Councilmembers, 1 Councilmember's Chief of Staff, 1 Policy Advisor on Solid Waste to an unrepresented Councilmember, 1 WTE consultant hired by the Division (who ultimately recommended WTE), and 3 landfill neighbors. I asked the four Councilmembers and one Policy Advisor to rank the PESTEW factors in order of importance to how they (or their representative Councilmember) voted on the Plan. Rankings were ordered by importance from highest to lowest, with 6 representing the most important or highest priority factor to a decision-maker, and 1 representing the least important or lowest priority. Figure 7 shows that only **Politics**, **Environment**, and **Waste Quality and Quantity** were ranked as most important across all five decision-makers, then **Technology**, and **Social** and **Economics**.

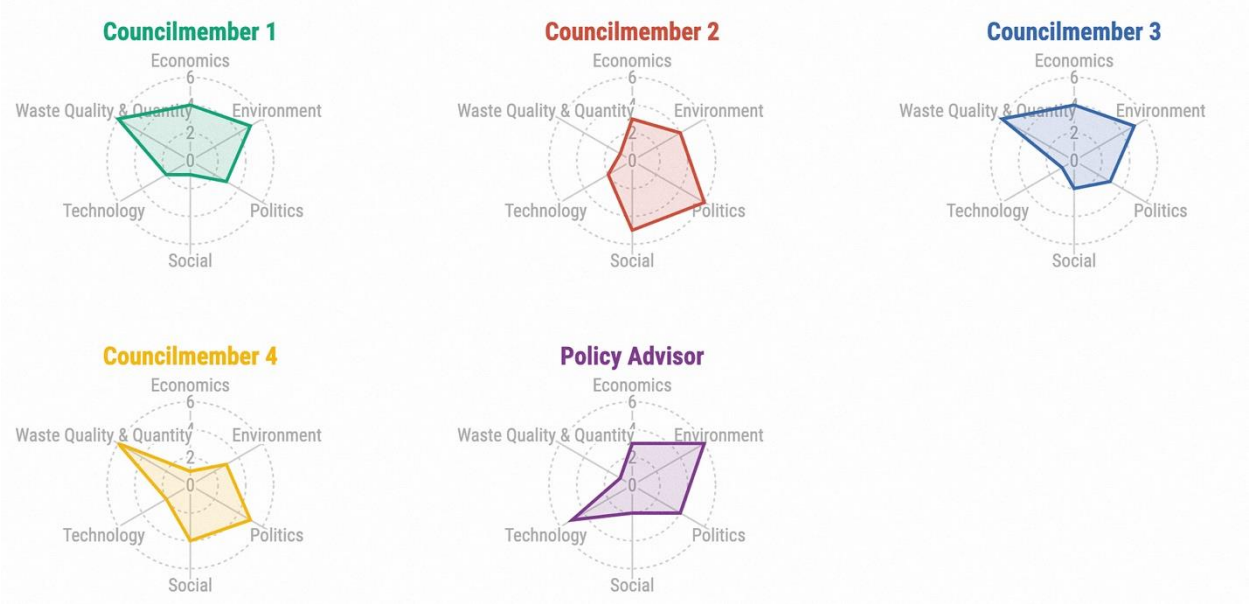


*Figure 7. Radar charts to visualize each decision-makers' rank order of PESTEW factors*

When broken down by vote, Figure 8 shows that the Councilmembers who voted to approve the Plan (shown as green, blue, and yellow polygons), all chose **Waste Quality and Quantity** as the most important factor in their decision-making process. The Policy

Advisor to a Councilmember who voted to approve the Plan suggests that **Environment** was the most important factor. The Councilmember who voted to reject the Plan felt that **Politics** was the most important factor in their decision-making process, whereas **Waste Quality and Quantity** was the least important.

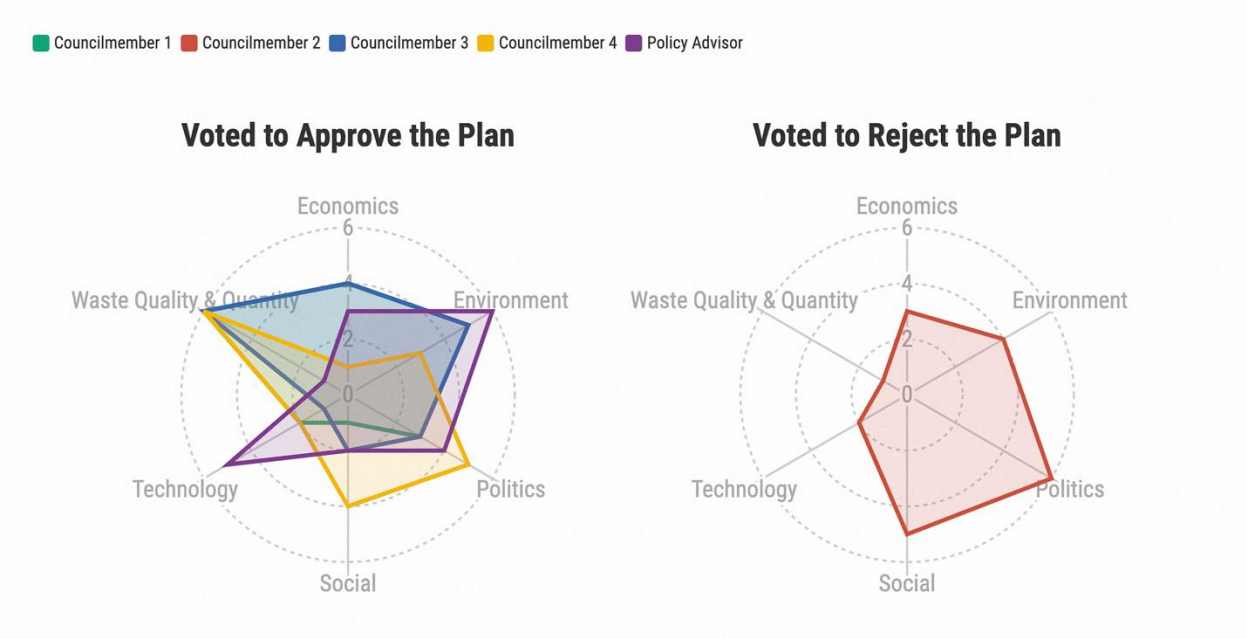


*Figure 8. Radar charts to visualize each decision-makers' rank order of PESTEW factors according to vote*

Averaging these ranking orders exposes where decision-makers are aligned or skewed in their prioritizing of factors while voting on the Plan. Table 1 displays the original ranking of factors along with a total average and then averages broken down by vote. From this vantage, **Environment** is ranked the most important factor among decision-makers (averaging 4.6 out of 6), and **Technology** is ranked the least important (averaging 2.4 out of 6). Considering how Councilmembers voted, these decision-makers were most aligned regarding **Economics** (averaging 3 out of 6), and least aligned regarding **Waste Quality**

**and Quantity** (averaging 4.8 out of 6 for Councilmembers that approved the Plan, and 1 out of 6 for Councilmembers that rejected the Plan).

| Position | Factor: Politics | Economics | Social | Technology | Environment | Waste Quality and Quantity |
|---|---|---|---|---|---|---|
| **Councilmember 1** Approved Plan | 3 | 4 | 1 | 2 | 5 | 6 |
| **Councilmember 2** Rejected Plan | 6 | 3 | 5 | 2 | 4 | 1 |
| **Councilmember 3** Approved Plan | 3 | 4 | 2 | 1 | 5 | 6 |
| **Councilmember 4** Approved Plan | 5 | 1 | 4 | 2 | 3 | 6 |
| **Policy Advisor** - Approved Plan | 4 | 3 | 2 | 5 | 6 | 1 |
| **Average Rank** | **4.2** | **3.0** | **2.8** | **2.4** | **4.6** | **4.0** |
| **Average of Decision-maker that** Approved Plan | **3.8** | **3.0** | **2.3** | **2.5** | **4.8** | **4.8** |
| **Average of Decision-maker that** Rejected Plan | **6.0** | **3.0** | **5.0** | **2.0** | **4.0** | **1.0** |

*Table 1. Table averaging the rank order of PESTEW factors among decision-makers*

Analysis of Qualitative Interviews

One Councilmember who voted to approve the Plan and ranked **Waste Quality and Quantity** as most important to their decision-making process said,

> *"I think that [factor] is the one that points to 'can the solution handle the problem?' The problem being we have a certain amount of people, people generate a certain amount and type and volume of waste, and we need to accommodate it. Therefore, the solution has to accommodate that amount and type of waste."*

The other two Councilmembers who voted to approve the Plan aligned with this sentiment, suggesting that the County should invest in technologies and public education campaigns around diversion (i.e. recycling, composting, etc.), before new disposal technologies. It came across that Councilmembers in-favor of the Plan found that all of the **Technology** options presented to them could be feasible, if not viable, in King County. One Councilmember said,

*"I truly believe that any of the major technologies we were considering can be made to work. They each have their challenges, mainly environmental, but also political. I think they can be made to work and operational and cost [effective] but it's just a question of which one meets those other [factors] best. To me, I would go through the criteria and then land on a technology."*

The Councilmember who voted to reject the Plan and ranked **Politics** as most important simply said, "in order to get the five votes we need, it happens politically", also suggesting that education is key to removing the sense of uncertainty that comes along with WTE technology. A Councilmember who voted to approve the Plan did mention that "key environmental voices" — such as Washington Conservation Voters, Washington Environmental Council, and the Sierra Club — were important to their voting perspective, and that they would be uncomfortable "being crosswise" with these groups.

There were multiple takeaways from my conversations with each interviewee. No interviewee said that landfills symbolize the ideal method for the final disposal of solid waste, rather most referred to them as a "necessary evil" or something similar. The Chief of Staff to a Councilmember who voted to reject the plan said,

*"Landfilling is, obviously, a major part of our waste disposal system. I think it's always going to have a role in some way, shape, or form. We ("we" meaning the human), have been burying our waste for probably several hundreds or thousands of years. So, I don't see it going away anytime soon. That being said, I don't think it's our best option. I think it's hard to envision but, if you look at our lifetime, the internet and cell phones weren't really a thing and now, 30 years later, the internet's in our pocket. Encyclopedias don't exist anymore because they're in our*

*pocket. Yet we still bury our waste. So, at what point do we as a society [become] unsatisfied with the status quo and look for something better?"*

Almost everyone acknowledged that landfilling has negative impacts on the surrounding community and environment. The Councilmember who voted to reject the Plan, the WTE Consultant, and two of the landfill neighbors vocalized that landfilling should not even be an option, or "necessary evil". A common remark about why Councilmembers approved the Plan was that they were *"buying time"* or *"maxing out an asset"*. By expanding the landfill into its final cell, the County "bought" themselves 20 more years to study, plan, and ultimately decide what the next disposal method will be. Being that the Cedar Hills landfill property is permitted for waste disposal and this is hard to come by, the County would essentially be leaving money on the table if they choose not to expand.

Regarding WTE, it seemed that interviewees were either advocating for its viability in King County or "not convinced" by the technology or potential environmental impacts. The Councilmember who voted to reject the Plan, the Chief of Staff, the WTE consultant and one landfill neighbor strongly advocated for WTE over landfilling. Some interviewees acknowledged that the County is currently employing WTE technologies at the landfill through Bio Energy Washington, which proves to one landfill neighbor that the County is not equipped to manage a WTE facility given the landfill gas-to-energy plant's history of failure.

Almost every interviewee, especially the Councilmembers, mentioned that since decision-makers "can't be experts in everything", they would need to defer their opinion to an expert they trust. In this case, for Councilmembers who voted to approve the Plan, they deferred to the Solid Waste Division's recommendation for landfill expansion. A Councilmember that voted to approve the Plan said,

> *"I think the work of the [Division] came with some deference in my approach. The recommendation from the department and the executive arrived with what I assumed to be some careful consideration/weighing of various elements and consequences, therefore I was probably deferential to the recommendation in the plan from the beginning."*

In this case, Councilmembers could choose to defer to the internal staff who recommended landfill expansion, and whom they have worked with before or for many years, or to the WTE Consultants who recommended a "new and expensive" alternative, and whom they have never worked with before. This concept of deference (deferring to experts) was frequently mentioned alongside comments about incrementalism. Almost everyone mentioned that King County decision-makers (i.e. Councilmembers and the Solid Waste Division) acted incrementally about waste management when developing or voting on the Plan. Figure 9 compares comments about incrementalism between Councilmembers that voted differently on the Plan, a landfill neighbor, and the WTE Consultant than recommended an alternative.

| Councilmember that voted to approve the Plan | Councilmember that voted to reject the Plan | A Landfill Neighbor's perspective of the vote | The WTE Consultant's perspective of the vote |
|---|---|---|---|
| "There's a point at which you can't stop that next cell from being used. We've built it, we've opened it, we used it, but that doesn't mean the next thing will need to be waste-to-energy as opposed to rail shipments." | "The county is going to have to figure out what to do about their obsolete wastewater plant and their obsolete landfill. Those are two very heavy lists and, frankly, I'm very concerned that they'll just keep kicking the can down the road." | "You're still faced with this genuinely free thing that's out there and working well in your view (and you're being told it's working well by the Solid Waste Division of course), versus something you have to go pay for. I think it's a pretty easy choice for any Councilmember to make, no matter what your Republican or Democrat stripes are." | "If you have somebody who keeps patching up a sinking ship, they know how to patch it up and keep it running, but it's still sinking." |

*Figure 9. Comparison of incrementalism quotes among interviewees*

The two Councilmembers have opposite opinions about the Solid Waste Division's recommendation for landfill expansion, which aligns with their vote. This was the only landfill neighbor that empathized with the Councilmembers who voted to approve the

Plan, acknowledging that the economics of the current system are convincing regardless of political party. Whereas the WTE Consultant simply regarded the Division as short-sighted in their actions, considering landfill expansion a fruitless venture.

## Discussion and Limitations

I used the PESTEW (Politics, Economics, Social, Technology, Environment, Waste Quality and Quantity) framework to look at a simple question of why King County made the decision it did on its solid waste management (Hurmekoski et al., 2013). However, I quickly found the PESTEW lens inadequate; King County's municipal solid waste management system cannot be synthesized into just six factors. My discretion is what fuels this framework, so the boundaries of each factor blurred when an interviewee's comment could not be isolated to one factor. For example, a decision-maker's apprehension towards siting a waste-to-energy (WTE) facility does not fall neatly into one factor. This concern was described using economics, environmental justice, the "not in my backyard" (NIMBY) mentality, and policy issues throughout the interviews. In the words of one Councilmember, "Just from a pure policy and political standpoint, siting any place to get rid of our collective garbage... we all make it, we all want to get rid of it, [but] nobody wants it to be put in the ground or in the air anywhere near them. So, it's the siting that's always a huge problem." In these moments throughout my research, I chose to apply multiple factors to a singular, albeit complex topic.

Additionally, my research uncovered factors that I did not consider prior to this study. For example, time, or timing, was a concern to one Councilmember,

> *"Timing is also a large factor. The 2018 update to the SWCP was a decade in the making and only extends the life of Cedar Hills Landfill by 20 years to 2040. Shifting a regional system that disposes of the solid waste of over 2 million people would be a big lift and require planning, partnerships, and immense funding. Ultimately, my colleagues and I did not feel that the technology and the timing were there yet with WTE."*

Another important factor that emerged from my interviews is education. In the context of this study, this primarily means educating the public and Councilmembers on WTE technologies, the cost structure of funding a facility, and their subsequent environmental impacts. Interestingly, only Landfill Neighbors, the WTE Consultant, and the Councilmember and Chief of Staff who wanted to reject the 2019 Solid Waste Management Comprehensive Plan ("the Plan") brought up the need for more education in their interviews. In the words of a Landfill Neighbor,

> *"I think a lot of people in our town hall wanted to know more about WTE before they said yes [to landfill expansion]. A lot of people were for it. But in the county, there was no education. All they did was say, 'this is too expensive. We can't do this. It'll take 12 years to site something like that. Too long to build...' all these negatives."*

None of the Councilmembers (or related Staff) who voted to approve the Plan spoke about the public or themselves needing or wanting more education on WTE. Because of these emergent factors, I cannot claim that the PESTEW approach to rank order analysis sufficed to embody the entire conversation about King County's decision-making process regarding landfill alternatives, specifically WTE. Therefore, my analysis of this case under the PESTEW framework is limited.

However, the PETSEW framework did provide a preliminary structure for the analysis of why King County rejected landfill alternatives, specifically WTE. The main reasons for not choosing this landfill alternative and adopting the Plan, provided by three Councilmembers and the representative Policy Advisor, were high initial costs (and impacts to ratepayers), environmental concerns, concerns about the size and scale of a facility, and apprehension about siting a new facility in King County. Another frequent

comment from this group regarded approving the Plan in order to "buy time" or "expand the planning horizon" to decide on a landfill alternative. In the words of one Councilmember's Policy Advisor,

> *"I think what it really came down to was, 'we'll expand this because it's already an existing infrastructure, [we'll] minimize the economic and environmental impacts, maintain where we're at, max out that [asset], and then use that time to create a more sustainable, evidence-based, long-term solution and future plan."*

I found that this perspective was not lost on the Landfill Neighbors interviewed, but that they did not necessarily agree with this logic. One Landfill Neighbor said, "As a citizen living next to the landfill, I have accepted the fact that King County sees it as an asset and is going to use every last bit of it until it's sold out. So, I'm never surprised when they decide to expand. 'We're gonna build a new area, we're gonna spend another 'x' million bucks so we can put more garbage in here.' My opinion on the expansion? I'm not surprised." This example showcases one of the many differences in perspective exist between Councilmembers and Landfill Neighbors.

Given this, I conclude that the Councilmembers employed rationalism in their vote on the Plan. As defined in the Literature Review, rationalism assumes that an actor has a specific goal in mind and chooses how to act based on what is the most likely means to achieving that end, while also assuming that an actor has access to all of the data necessary to make the most rational decision possible. As decision-makers, each Councilmember had a specific goal in mind and chose how to vote based on how they thought they could most likely achieve that goal. Through the multiple reports from both third-party consultants and the Solid Waste Division ("the Division"), they were provided

an in-depth analysis of policy options and assumed that they had access to all of the data necessary to make the most rational decision in their mind. An emergent concept from my interview with a Councilmember's Chief of Staff spoke to the principle and practice of rationalism in this context:

> *"When do they choose how they will vote? I think, to answer your question with a question, what are they voting on? I think there are going to be nine different answers to 'what are you voting on'. For a lot of the members who voted yes, their answer to that question might be something like, 'well, this is a regional plan for how we're going to handle waste. Yes, it says we're going to landfill now, but it also talks about how we're going to make a decision after we close Cedar Hills Regional Landfill'. For my boss, who voted no, it was 'yes, but we don't have that kind of time. We need a decision now and we should have the information to make that decision now'. So, how do you get there?"*

Being that the Councilmembers are aligned on solid waste management decisions solely through the policies listed in the Plan, the "means to that end" is up to their discretion. They do not necessarily need to be aligned on *how* to achieve something like zero waste, for example (King County, 2019).

Councilmembers cannot know everything about an issue prior to a vote, and this highlights the pitfall of rationalism. Each of the Councilmembers who voted to approve the Plan acknowledged employing deference to some degree (that is, deferring to experts) during their decision-making process. In the end, this deference directed them to fall back to the Solid Waste Division's recommendation for landfill expansion in order to "max out their asset" and "expand the planning horizon". One Councilmember described this logic:

> *"When it comes to these kinds of decisions, I do have to rely a great deal on the expertise of the policy professional staff that work for the county*

*and the consultants that we hire to give us input. There were some conflicting findings among the multiple studies. Not being an expert, I resolved them based (as much as I can) on the weight of the recommendations. Like, 'most people seem to be recommending this versus that'. I knew that our Solid Waste Division was recommending in the short- to medium-term we expand the landfill to get the absolute most out of it that we can and at that point, we'll need to come up with something else. And our own internal experts' position never really changed. So, to me, that was kind of the leading proposal."*

There are echoes of this thought process in other Councilmembers' interviews. Another Councilmember also acknowledged not being an expert on solid waste management and the process that led them to vote in favor of the Plan,

*"Legislators of any level are a mile wide and an inch deep. We choose what issues to dive into and become policy experts [on] or have more depth in than others because we can't be experts in everything that comes before us. [You have to learn] who you [are] going to follow on the issues that you [aren't] an expert on. Whose philosophy [are] you aligned with? Who [do] you trust? Who [do] you think [won't] lead you or your constituents astray? The recommendation that came from the Division and the Executive arrived with what I assumed to be careful consideration of various elements and consequences; therefore, I was probably deferential to the recommendation in the plan from the beginning."*

From these conversations, I propose that Councilmembers form networks of experts to defer to when encountering a knowledge gap. This can be seen in the literature largely regarding government agencies and administrative law. One study surveying mayors, chief administrative officers, and city managers found that the more a mayor found their role to be managerial the less they deferred to the expertise of their internal staff (Potter and Eskridge, 2018). Another study on European supreme and constitutional courts found

that judges who were formerly academics are less deferential than those who were formerly lawyers (Skiple et al., 2020). So, I conclude that if a Councilmember was not passionate about WTE technologies, or waste management was not one of their key issues, then they deferred their opinion to the Division's recommendation for landfill expansion. To answer why some Councilmembers went against this recommendation and voted to reject the Plan, I found one of their Chief of Staff's comments clarifying: "Every [Council]member has their passion issue, whatever it may be. So that also drives some of their interest in how much they're going to dig into [the Plan], and shape their opinions. We all only have the capacity to do so much." The Councilmember I interviewed that rejected the Plan spoke in-depth about their passion for WTE technologies, citing specific facilities in Europe and the U.S. Because of this, I conclude that Councilmembers who were previously passionate about landfill alternatives, like WTE, chose to reject the Plan.

My analysis of the Plan and the long history of expansion at the Cedar Hills Regional Landfill has also led me to a second conclusion: that the King County Solid Waste Division acts incrementally about solid waste management. Based on Etzioni's (year) description of incrementalism as intentionally reducing the scope of a decision to a shorter timeframe, the Solid Waste Division's focus on the short-run of solid waste management has established the "norm" of landfill expansion and dissuades "innovative" alternatives like WTE. Everyone interviewed acknowledged, in so many words, that landfilling is a "necessary evil". Whereas the opinions on WTE were varied. The four Councilmembers and one Policy Advisor who approved of the Plan considered WTE to be either "premature" technology, having unknown implications if done "too quickly", potentially creating a more "toxic" waste than landfills, or simply "unconvincing".

## Conclusions and Recommendations

Despite the limitations of the PESTEW model, my research suggests that King County Councilmembers were rational (Lindblom, 1959) in their decision-making process while voting on the 2019 Comprehensive Solid Waste Management Plan ("the Plan"). News articles produced during the decision-making period discussed economic factors the most and social factors the least. All interview participants believed that landfilling solid waste is not an ideal method of waste disposal, and most acknowledged the negative impacts this method is having on the surrounding community. Councilmembers interviewed that voted to approve this Plan deferred to the Solid Waste Division's (SWD) recommendation for landfill expansion due to a lack of expertise on the issue. This lack of expertise could be because solid waste was not a Councilmember's personal passion or key political issue. On the other end, the Councilmember interviewed that voted to reject the Plan was passionate about waste-to-energy (WTE) as a landfill alternative. This passion for WTE led this Councilmember to educate themselves in-depth on the issue and therefore they did not defer their opinion to the SWD. As for the SWD, my research suggests that they acted incrementally (Etzioni, 1967) regarding the capacity of their landfill. With over 55 years of landfill expansion, the SWD again continued to choose this option rather than seek alternatives in the Plan presented to Council.

Education is a pivotal factor when considering landfill alternatives like WTE. Given its controversial history, WTE comes with concerns similar to landfilling. From a government perspective, Councilmembers expressed concern over siting a new facility in King County due to the "not in my backyard" (NIMBY) mentality common to waste

facilities. From the public's perspective, landfill neighbors expressed NIMBY-related concerns about possible air quality and odor issues that could occur if a WTE was sited in their community. In the words of one landfill neighbor, "If we had a smokestack in my backyard and it was waste-to-energy, would I be okay with that? I don't know. I don't think so. I'm scared of it because I don't understand it, so maybe if I understood more about it…" From my conversations with landfill neighbors, two mentioned wanting more educational opportunities from the County about WTE technologies under consideration, or feeling like their community didn't receive enough. In the words of a Councilmember passionate about WTE,

> *"It will take a lot of public education to have people understand that [waste-to-energy] is actually better than what is happening currently. I think it's hard for people [to understand WTE] who haven't seen it. [However,] I don't understand why it's so complicated to go and see something better than what we have and say, '[we can] replicate it'. It would be good in my mind to get people that [the public] can trust about a variety of things to go [tour] a couple of plants in the world. There's less dust in those plants than there is in my house. [And even] at Ground Zero, if you can't smell it there, you won't smell it anywhere. If people could see that it would be helpful, because seeing is believing."*

As an advocate for WTE in King County, this Councilmember hosted multiple symposiums prior to voting on the Plan in an attempt to educate constituents about the WTE facilities they had personally toured (Kathy Lambert, 2020). This was the only Councilmember to provide such educational opportunities.

From a policy standpoint, there are two strategies for approving landfill alternatives that I concluded from my conversation with a Councilmember's Chief of Staff. The first would involve gaining public support for alternatives like WTE. When the

Cedar Hills Regional Landfill is scheduled to finally close then all disposal options will have the common denominator of requiring some level of infrastructure development. Only then will all options be on "equal footing". In the words of this Chief of Staff, "It's easy to say, 'our landfill has less negative environmental impacts than WTE' when [the landfill is] already built and operating. When they're on equal footing, all of a sudden you have to have an honest conversation about the impacts and benefits of both of them." In this situation the public would be brought into the conversation, able to educate themselves on the options, and ultimately form their opinion about what the County should do once the landfill is full. The second approach to getting a landfill alternative approved focuses on connecting issues within the system. Waste management is not a key issue or even an interest of every decision-maker, but waste management touches many parts of the entire system. From this perspective, and in the words of the Chief of Staff,

> *"You have nine different people on the council all with their own interests. [You can say,] 'waste management is important to my member, how do I relate that to something that the eight other members are going to care about?' For some of them it might be economics, for others it might be the environment or the social side of it. [Absorbing other issues within the system,] that's how you get people who wouldn't otherwise be interested in waste management, interested in waste management. That's how you build a coalition."*

For example, this interviewee spoke to key environmental groups' opinions of the airline industry, specifically the use of jet fuel and its impact on communities surrounding airports. WTE technologies can absorb some of the issues surrounding jet fuel by providing an alternative fuel source derived from solid waste. By creating one solution

for two issues, groups with different key issues can align on their perspective of landfill alternatives like WTE.

From my research, I have documented the decision-making process in King County regarding landfill alternatives in the 2019 Comprehensive Solid Waste Management Plan. My study is unique in that it examines the perspectives of multiple stakeholders, highlighting how Councilmembers came to their conclusions regarding the Plan. Little research has been conducted on county-level decision-making regarding landfill alternatives in the U.S. Given the emergent connection I discovered between decision-making and deference in the context of this case study, I encourage further research into the impacts of deference on long-term solid waste management planning. With landfill space becoming scarcer at the Cedar Hills Regional Landfill, King County staff working on solid waste need to seriously consider the viability of landfill alternatives in order to ensure their system remains resilient. Even though alternatives will not fully negate the need for landfills in the short-term, alternatives are part of a long-term solution. In the words of one landfill neighbor,

> *"The folks that laid the phone lines down had no idea that the internet was going to come along. The Internet came along in the 80s and 90s and has changed our world in many ways, for better and worse, but it changed our world. What we need to do is lay the phone lines and let your kids, my kids, my grandkids innovate. Goddamn, you have to look 100 years out. If we keep building these landfills up, they aren't going away. When we start thinking about it long-term, how is this thing going to impact us in 50 years? Start making those social decisions today. I know they're difficult politically, I know they're difficult economically, I know they're not at the top of your constituents' minds. But those are the sorts of tough choices we have to start making today to make a difference tomorrow."*

From this research, I postulate that local governments can avoid the pitfalls of incrementalism by seeking partnerships with universities to stay educated on best waste management practices and new and progressive technologies. Along with this, local governments can prioritize education internally for both Councilmembers and employees of the Solid Waste Division. For example, organizing tours of modern WTE facilities for staff and elected officials could challenge any misconceptions they might have regarding WTE technologies. Finally, local governments can poll constituents regarding their opinion of landfill alternatives to gain a better understanding of what ratepayers prefer the county does with their solid waste. I hope that my research encourages further investigation into local government decision-making, impacts of education on public opinion of WTE, and the connection between decision-making and deference regarding solid waste policymaking.

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# Appendices

## **Appendix A:** Letter to Subjects (front)

Date

**Letter to Subjects**

Dear _____,

I am a graduate student at The Evergreen State College pursuing a master's degree in Environmental Studies. As part of my thesis work, I will be conducting a research project titled "To Want or To Waste: An Exploration of Municipal Decision-Making in King County Regarding Landfill Alternatives". The purpose of my project is to gather information on how Washington State municipalities make decisions about their waste management systems. I am conducting qualitative case study research on King County's recent vote to adopt the 2019 Comprehensive Solid Waste Management Plan ("the Plan"), committing to expand the Cedar Hills Regional Landfill rather than invest in landfill alternatives.

In order to advance my thesis work, I am asking to conduct a 15 minute semi-structured, audio-recorded interview with you regarding your experience voting to adopt the Plan. I am minimizing risk to you by providing the attached consent form. This will ensure your confidentiality if requested. There is no compensation available for your participation, which is completely voluntary. However, you may withdraw your participation at any point or skip any question you do not wish to answer.

I will keep your responses to my questionnaire in a password protected computer accessible only by me. I may share part or all of them with my faculty sponsor, **Shawn Hazboun**, but no one else. Upon completion of the project, I will destroy the file. As mentioned above, I will use your responses as resource material for my research paper on municipal decision-making regarding landfill alternatives in Washington State. At your request, I will provide you with a copy of the final draft. The paper will be read by my faculty sponsor and department director. I will also be presenting the conclusions of my research to my university cohort.

**Appendix A:** Letter to Subjects (back)

Date

Again, I may report your responses in my paper but can keep your identity confidential upon request. In the event I attempt to publish my findings in a scientific journal, you will again have the opportunity to review and remove your identifying information.

If you have any questions about this project or your participation in it, you can call me at [redacted]. My email address is [redacted]. The person to contact if you have questions concerning your rights as a research subject or experience problems as a result of your participation in this project is:

**John McLain**, IRB Administrator
The Evergreen State College, Library 2211
Olympia, WA 98505
Phone (360) 867-6045

Thank you for your participation and contribution!

Sincerely,

**Gretchen Helpenstell**
Master's Student at The Evergreen State College
[redacted]

**Appendix B:** Consent Form (front)

Date

**Consent Form**

I, _____, hereby agree to serve as a subject in the research project titled "To Want or To Waste: An Exploration of Municipal Decision-Making in King County Regarding Landfill Alternatives". It has been explained to me that its purpose is to gather information about how elected officials in Washington State municipalities make decisions about their waste management system. The research activity I will participate in is responding in writing to a semi-structured, open-ended questionnaire.

I have been informed that the information I provide will only be listened to and used for a research paper and presentation by **Gretchen Helpenstell** for her thesis work at **The Evergreen State College**. I also understand that my responses may be reported in the paper and presentation, and my identity can be kept confidential along with my identifying information upon request. Gretchen Helpenstell has agreed to provide, at my request, a copy of the final draft of her paper. Ms. Helpenstell has also informed me that she may want to attempt to publish her work, in which case I have another opportunity to remove my information from the study.

I understand that the risks to me are minimal. I agree to be interviewed and to have my responses recorded for this project. I have been told my responses will only be heard by Ms. Helpenstell and her faculty sponsor and will be destroyed when the project is finished.

There will be no compensation available for my participation. I have been told that I can skip any question or withdraw my full participation from the study at any time without penalty. If I have any questions about this project or my participation in it, I can call Ms. Helpenstell at [redacted], or email her at [redacted]

**Appendix B:** Consent Form (back)

Date

Likewise, the person to contact if I have questions concerning my rights as a research subject or I experience problems as a result of my participation in this project is:

**John McLain**, IRB Administrator
The Evergreen State College, Library 2211
Olympia, WA 98505
Phone (360) 867-6045

I understand that my participation in this project is completely voluntary, and that my choice of whether to participate in this project will not jeopardize my relationship with The Evergreen State College. I am free to withdraw at any point before or during the interview. I have read and agree to the foregoing.

Signature_____ Date_____

**Appendix C:** List of Interview Questions (front)

Date

## List of Interview Questions

**Background:**

King County's Recent Waste Management Decision: In 2019, the King County Council had to make a decision about what to do with their county's solid waste. They were presented with three options: expand the last landfill into its final cell, export waste by rail to another county, or invest in new waste-to-energy (WTE) infrastructure. The final vote was 5-2 to expand the landfill into its final cell.

Waste-to-Energy (WTE): A thermochemical technology that can manage large quantities of municipal solid waste for final disposal. In the context of my research, these technologies include incineration, pyrolysis, and gasification. They do not include biochemical technologies such as anaerobic digestion.

Municipal Decision-makers: In the context of my research, this term is defined as the King County Councilmembers who vote on a waste management-related decision.

**Questions:**

1. What is your experience with waste management in Washington State?
2. What is your experience with waste-to-energy (WTE) in Washington State?
3. What is your opinion of **landfilling** as a means of final disposal for municipal solid waste?
4. What is your opinion of **WTE** as a means of final disposal for municipal solid waste?
5. In your opinion, what is the municipal decision-making process regarding waste management in King County? Do you feel this process is efficient and/or productive?
6. Do you know what the general public opinion of WTE was in King County at the time it was being considered? Do you know what the public opinion is now?
7. Who or what do you think creates the most resistance for landfill alternatives, specifically WTE?
8. What does your ideal waste management system look like in King County?
9. What do you think a realistic future of waste management looks like in King County?

**Appendix C:** List of Interview Questions (back)

Date

**FOR COUNCILMEMBERS AND STAFF ONLY:**

10. At what point in the decision-making process did you know how you would vote?
    a. How was evidence (i.e. feasibility studies, forecasting, environmental assessments, etc.) used to direct or assist your vote?
    b. How were public comments used to direct or assist your vote?

11. My study considers the following six topics critical to the decision to adopt the 2019 Comprehensive Solid Waste Management Plan.

    **How would you say each of these topics factored into your vote? Can you rank them <u>in order of importance</u>?** (1 = most important, 6 = least)

    _____ **Economics**: the financial impacts of the decision.
    i.e. initial costs, potential ROI, construction time, impacts to the local economy, etc.

    _____ **Environment**: the conditions, assets, and vulnerabilities of the regional environment.
    i.e. the impact of disposal methods on the regional environment (leachate, methane, carbon dioxide, dioxins, etc.), impacts to local wildlife and ecosystems, etc.

    _____ **Politics**: the political climate and culture during the decision-making process.
    i.e. your opinion prior to the decision, consideration of expert/consultant and public opinions, influence by third parties (lobbyists, other municipalities), etc.

    _____ **Social**: the "attitude" of the constituents within the municipality.
    i.e. opinion of the voters in your district, impacts to their public health and quality of life (disamenity affects like noise, dust, odors), etc.

    _____ **Technology**: the available technologies being considered by the municipality.
    i.e. whether the technology is proven to work or if there are potential risks (will the technology likely be improved in a few years), energy efficiency, the size of the proposed system, etc.

    _____ **Waste Quality and Quantity**: the conditions of the municipality's current waste management system.
    i.e. how much waste is being generated and how much is forecasted to be generated, the composition of waste being considered and whether it can be diverted, etc.

**Research Coding Key**: King County, Cedar Hills Landfill, and Waste-to-Energy 2020

What were the factors that led KC to reject WtE?

- **News Articles:** What was the scope and tone of coverage in news outlets?
- **Public Comments:** Did King County residents prefer a landfill expansion or waste-to-energy project?

| Variable | Description | Coding |
|---|---|---|
| **ID** | Unique ID number for each article or letter | ### |
| **Newspaper** | What is the name of the newspaper? | Ex: "The Daily News" |
| **Date** | Date | MM/DD/YYYY |
| **Title** | Title of article or letter | Paste in full |
| **Author** | Author of article or letter – **"Last, First"**<br>*If no author listed for news article, write "Staff"* | Last name, first name |
| **Location** | If this is a letter to the editor, **does the author state their city of residence?**<br>*If yes, write in. If no, leave blank.* | Ex: "Kelso, WA"<br>99 = N/A |
| **Expert** | Does the **author identify as an expert in waste management, part of SWAC, or was hired** by King County to assess landfill alternatives? | 1 = Yes<br>0 = No |
| **Studies** | Does the letter or article **bring up the consultancy studies**? | 1 = Yes<br>0 = No |
| **Type** | Is this a news article, a letter to the editor, opinion piece, or something else? | 1 = News<br>2 = Letter<br>3 = Opinion<br>0 = N/A (e.g., event calendar) |
| **Stance** | If this is a letter or opinion piece, is the **stance** bias, neutral or unclear? | 1 = Bias<br>0 = Neutral<br>99 = Unclear |
| **WordCount** | What is the **word count** of this letter or opinion piece? | ###### |
| **Body** | Text of the body of the article or letter | Paste the entire body of the article or letter |

1

| | | |
|---|---|---|
| **LandfillX** | If this is a letter or opinion piece, is the stance **supportive, unsupportive, or neutral of the Cedar Hills Landfill expansion**? | 1 = Supportive<br>0 = Unsupportive<br>99 = Neutral or N/A |
| **WtE** | If this is a letter or opinion piece, is the stance **supportive, unsupportive, or neutral of WtE**? | 1 = Supportive<br>0 = Unsupportive<br>99 = Neutral |
| | | |
| **WQuant** | Does the article, letter, or opinion piece discuss the **quantity of waste produced annually in King County**? | 1 = Yes<br>0 = No |
| **WQual** | Does the article, letter, or opinion piece discuss the **quality or composition of waste** produced in King County? | 1 = Yes<br>0 = No |
| **WGeneration** | Does the article, letter, or opinion piece discuss the **forecasted waste generation for King County** (due to population growth)? | 1 = Yes<br>0 = No |
| **WDiversion** | Does the article, letter, or opinion piece **discuss specific diversion methods** in King County? | 1 = Yes<br>0 = No |
| **WDiversion-Stance** | Does the article, letter, or opinion piece discuss being **for or against waste diversion** in King County? | 1 = Pro<br>0 = Neg<br>99 = N/A |
| **WDiversion-WtE** | Does the article, letter, or opinion piece discuss **WtE as a disincentive/decrease or incentive/improve to recycling**? | 1 = Incentive<br>0 = Disincentive<br>99 = N/A |
| | | |
| **EconCost-WtE** | Does the article, letter, or opinion piece mention or quote an opinion that the initial cost of WtE is **too high** or **manageable** for King County? | 1 = Too High<br>0 = Manageable<br>99 = N/A |
| **EconCost-WtE$** | How much money is quoted for the initial costs and operating costs of a WtE system for King County? | 1= Lists Quote ($$$)<br>99 = N/A |
| **EconCost-LandfillX** | Does the article, letter, or opinion piece mention or quote an opinion that continuing landfill operations is **too high** or **manageable** for King County? | 1 = Too High<br>0 = Manageable<br>99 = N/A |
| **EconCost-LandfillX$** | How much money is quoted for the initial costs and operating costs of a landfill expansion or landfill related alternative (export-by-rail) for King County? | 1= Lists Quote ($$$)<br>99 = N/A |

| | | |
|---|---|---|
| **EconROI-WtE** | Does the article, letter, or opinion piece mention the possibility for a **return on investment (ROI) for WtE**? | 1 = Yes<br>0 = No |
| **EconConst-WtE** | Does the article, letter, or opinion piece mention or quote an opinion that the construction time to build a WtE system is **long** or **manageable** for King County? | 1 = Long<br>0 = Manageable<br>99 = N/A |
| **EconRate-WtE** | Does the article, letter, or opinion piece discuss WtE's potential to **raise** ratepayer fees? | 1 = Yes<br>0 = No |
| **EconLocal-WtE** | Does the article, letter, or opinion piece discuss WtE's potential to **positively** or **negatively** impact the local economy, local tax revenue, or local organizations? | 1 = Positive<br>0 = Negative<br>99 = N/A |
| **EconJobs-WtE** | Does the article, letter, or opinion piece discuss WtE's potential to **positively** or **negatively** impact local jobs? | 1 = Positive<br>0 = Negative<br>99 = N/A |
| **EconomiesScale-WtE** | Does the article, letter, or opinion piece discuss **WtE as affordable or unaffordable in terms of economies of scale** (incentivizing larger systems)? | 1 = Affordable<br>0 = Unaffordable<br>99 = N/A |
| **EconResil** | Does the article, letter, or opinion piece discuss **WtE or landfilling as increasing King County's waste management resilience**? Reduce reliance on domestic/international waste management? Or the ability/capacity for energy trade, competitiveness on international market? | 1 = WtE<br>0 = Landfill<br>99 = N/A |
| | | |
| **EnvImpact-WtE** | Does the article, letter, or opinion piece say that **WtE will have a better or worse impact** on the regional environment than the landfill? | 1 = Better<br>0 = Worse<br>99 = N/A |
| **EnvClimate** | Does the article, letter, or opinion piece discuss concerns about **the impact of waste on climate change**, global warming, carbon emissions, transition to a renewable energy future? | 1 = Yes<br>0 = No |
| **EnvHarm-Waste** | Does the article, letter, or opinion piece **discuss concerns about waste's harm to the environment**, including species, habitat, water quality, and "pollution" generally (but NOT climate change). | 1 = Yes<br>0 = No |
| **EnvPerm-Landfill** | Does the article, letter, or opinion piece **discuss the permanent state of landfills** (i.e. retired landfills, federal laws for regulation/monitoring/supervision, Superfund, etc.)? | 1 = Yes<br>0 = No |
| **EnvHarm-Leachate** | Does the article, letter, or opinion piece **discuss the inevitable nature of landfill leakage?** | 1 = Yes<br>0 = No |
| **EnvHarm-LandfillSpecies** | Does the article, letter, or opinion piece **discuss the species affected by the Cedar Hills Landfill?** | 1 = Yes<br>0 = No |

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| **EnvJustice** | Does the article, letter, or opinion piece discuss **environmental justice issues** around modern waste management practices (siting in lower-income/minority communities, access, unfair rates)? | 1 = Yes<br>0 = No |
| | | |
| **Tech-LFGtE** | Does the article, letter, or opinion piece mention that Cedar Hills is employing **landfill gas-to-energy**? | 1 = Yes<br>0 = No |
| **TechEff-Energy** | Does the article, letter, or opinion piece mention that **WtE is more** or **less efficient at generating energy** than landfill gas-to-energy? | 1 = More<br>0 = Less<br>99 = N/A |
| **TechEff-MGMT** | Does the article, letter, or opinion piece mention that **WtE is more** or **less efficient at managing waste** than landfills? | 1 = More<br>0 = Less<br>99 = N/A |
| **TechProven-WtE** | Does the article, letter, or opinion piece mention that WtE is a **proven** or **unproven technology** for waste management? | 1 = Proven<br>0 = Unproven<br>99 = N/A |
| **TechRisk-WtE** | Does the article, letter, or opinion piece mention any **technological risks with WtE**?<br>(i.e. will the tech likely be improved in a few years, the tech is unreliable, reliance on garbage, etc.) | 1 = Yes<br>0 = No |
| **TechRep-WtE** | Does the article, letter, or opinion piece talk about **modern WtE technology having a bad reputation** (e.g. from older incinerators)? | 1 = Yes<br>0 = No |
| **TechDef-WtE** | Does the article, letter, or opinion piece **define/clarify "waste-to-energy" as a specific technology**?<br>(i.e. mass burn, incineration, pyrolysis, gasification) | 1 = Yes<br>0 = No |
| **TechRenew-WtE** | Does the article, letter, or opinion piece **define WtE as a renewable technology** (carbon credits)? Or comment on the need to transition to renewable energy, or how WtE plays a role in the transition to renewables? | 1 = Yes<br>0 = No |
| | | |
| **PolKCO** | Does the article, letter, or opinion piece **discuss specific and current King County officials?** (If so, list who.) | 99 = N/A<br>1 = Yes (Full Name) |
| **PolKCCM-Opinion** | Does the article, letter, or opinion piece discuss the **opinions of specific King County Councilmembers or decision-makers regarding WtE?** | 1 = Yes<br>0 = No |
| **PolKCCM-Education** | Does the article, letter, or opinion piece discuss **educational efforts by King County Councilmembers on WtE?** | 1 = Yes<br>0 = No |

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|---|---|---|
| **PolDistrust** | Does the article, letter, or opinion piece discuss **claims of corruption, lobbying, or power players influencing decision-makers** (from either landfill or WtE side)? Are there claims that political institutions don't have the publics' interest in mind? | 1 = Yes<br>0 = No |
| **PolProcessNeg** | Does the article, letter, or opinion piece talk about **concerns regarding the decision-making process**, such as:<br>• Decision process/schedule<br>• Comments from state agencies not adequately considered<br>• Secrecy/dishonesty/distrust of decision makers or the other side<br>• Bias of studies. Amount of misinformation.<br>• Representation of peoples' voice in decision making<br>• High cost of studies/process<br>• Time-consuming nature of process<br>• EIS not adequately considering alternatives<br>• Dominance of opponent concerns as "small, vocal minority" | 1 = Yes<br>0 = No |
| **PolStates-WtE** | Does the article, letter, or opinion piece talk about how **WtE will positively** or **negatively impact other states** besides Washington, or the nation as a whole? | 1 = Positive<br>0 = Negative<br>99 = N/A |
| **PolSeattle** | Does the article, letter, or opinion piece talk about **how Seattle disposes of their waste** (by rail)? | 1 = Yes<br>0 = No |
| **PolUSA-WtE** | Does the article, letter, or opinion piece **make comments related to the domestic use of WtE**:<br>• Spokane, WA<br>• Oregon<br>• Florida | 1 = Yes<br>0 = No |
| **PolInt'l-WtE** | Does the article, letter, or opinion piece **make comments related to the international use of WtE**:<br>• European Prevalence<br>• Asian Prevalence<br>• "Backyard Burning" | 1 = Yes<br>0 = No |
| **Pol-Experts** | Does the article, letter, or opinion piece **reference or quote an expert hired by King County to conduct a study/analysis**? | 1 = Yes<br>0 = No |
| **Pol-SocPref** | Does the article, letter, or opinion piece discuss **King County officials / decisionmakers explaining that the public prefers a specific option**? | 1 = WtE<br>0 = Landfill Expansion<br>99 = N/A |
| | | |

| | | |
|---|---|---|
| **SocPref** | Does the article, letter, or opinion piece discuss or quote **actual King County residents preferring a specific option**? | 1 = WtE<br>0 = Landfill Expansion<br>99 = N/A |
| **SocPubHealth-LandfillX** | Does the article, letter, or opinion piece discuss **public concerns about pollution from normal landfill operations** and impact on public health, asthma, air or water quality? | 1 = Yes<br>0 = No |
| **SocPubHealth-WtE** | Does the article, letter, or opinion piece discuss **public concerns about pollution from WtE operations** impact on public health, asthma, air or water quality? | 1 = Yes<br>0 = No |
| **SocProperty** | Does the article, letter, or opinion piece discuss **public concerns about property values**, views, increased property insurance costs, etc.? | 1 = Yes<br>0 = No |
| **SocDisamenity-LandfillX** | Does the article, letter, or opinion piece discuss **public concerns about the landfill's impacts on neighborhoods**, schools, culture, quality of life, noise (disamenities). | 1 = Yes<br>0 = No |
| **SocDisamenity-WtE** | Does the article, letter, or opinion piece discuss **public concerns about WtE's impacts on neighborhoods**, schools, culture, quality of life, noise (disamenities). | 1 = Yes<br>0 = No |
| **SocReputation-WtE** | Does the article, letter, or opinion piece discuss **the bad reputation of WtE among King County residents?** | 1 = Yes<br>0 = No |
| **SocMisconcept-WtE** | Does the article, letter, or opinion piece speak to **public misconceptions about WtE?** | 1 = Yes<br>0 = No |
| **SocEngagement** | Does the article, letter, or opinion piece speak to **efforts by the municipality to include the public** in the discussion? | 1 = Yes<br>0 = No |
| **SocSat** | Does the article, letter, or opinion piece comment on the public's **satisfaction** or **dissatisfaction** with the municipality's work/efforts regarding this issue? | 1 = Satisfied<br>0 = Unsatisfied<br>99 = N/A |
| **Rail** | Does the article, letter, or opinion piece discuss the "waste export by rail" alternative? | 1 = Yes<br>0 = No |
| | | |
| **Notes** | Your comments about:<br>● Difficulties coding particularly areas of text.<br>● Ideas for recodes, lumping/splitting of codes, new codes.<br>● Recording important dates/events | |
| **Quotes_label** | The theme label for good quotes: **Economy, Environment, Technology, Politics, Social, etc.** | Example:<br>"Environment" |

| | | |
|---|---|---|
| **Quotes_text** | Insert quotes that strike you as especially important, relevant, or that might be good to use in later analysis and writing up. Use quotes to indicate direct quotes. | Paste quote word-for-word |

4/23/2020

**Yellow Highlights**: these are combined variables, which I'm not sure are allowed. (Aka, their coding is not "1 = Yes", "0 = No".)