

**Automating and Visualizing Property Data for the Pacific County Economic Development
Council**

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Executive Summary

This project looks at the Pacific County Economic Development Council (PCEDC) and their needs to maintain and expand their data coverage of the parcels of land they help prioritize the development of. The county has been making efforts to expand the amount of affordable, developable land in their inventory to meet their growing population growth. Thus, the data behind the parcels of land within their inventory database becomes incredibly valuable to planning efforts, and proper prioritization can make, or break meeting housing quotas set by the state.

Within this report, there will be an analysis into the current state of the PCEDC and their ability to use this data for their own needs, identifying areas of opportunity regarding the data entering their database, the management of said databases, and the processes that update the data in the database. Through evaluating these areas, the purpose of this report is to indicate to the PCEDC where they can spend less time managing data and spending more time managing land development. This report will also look into an ideal future state, where the PCEDC is able to use multiple sources of data to contribute to the usability of the land and visualize their inventory database using an open source, free to use software that will enable them to share insights and quickly cut through layers of data.

Lastly, this report will run through recommendations based on a feasibility analysis into the best options to optimize their parcel management process. The feasibility analysis will take on the multiple layers of context given to this team early on and address how they fit into this recommendation, ensuring the problems facing the PCEDC are being met through said recommendations. Ultimately, with the recommendations outlined in this report, the PCEDC should be able to take this penultimate report and charter a future Livable City Year (LCY) from the University of Washington to act on these findings and make them possible.

Project Overview

The Pacific County Economic Development Council (PCEDC) has an inventory database containing available parcels of land in the county. The purpose of this database is to list, manage, and add parcels existing around the county to prioritize parcels of land for use as the county rapidly expands in population. The PCEDC requires an easy-to-use inventory management solution that will have information automatically updated and visualized for them so any employee or partner of the council can quickly see information pertinent to decision making and governance surrounding land management.

The impact of this project will be aiding in the success of the PCEDC as they allocate land towards their county's rapid growth. If the project deliverables aid in another party establishing a visualized database with automatically populated information, then the PCEDC will be able to work more efficiently. An analysis of the information coming into the PCEDC inventory database and adding recommendations for automating information entering the database, a recommendation for visualizing the PCEDC inventory database with preferably open-source and

easy-to-use software, study other sources of information to include in this database from external (if possible).

Project Background and Business Case

This project has been chartered and organized through Livable City Year (LCY), a group sponsored by the University of Washington to give opportunities to students to go out and practice working on projects in the real world with actual clients who could use help. Our project sponsor, the Pacific County Economic Development Council is the group that helps manage the economic well-being of Pacific County residents in Washington State. Pacific County is a small county, consisting of 24,111 residents (Census, 2022) living in 13 separate communities within the county. The largest incorporated cities within Pacific County include Raymond with 3,092 residents, Long Beach with 1,719 residents, and South Bend with 1,637 residents as of 2022(Census Reporter, 2022), each with their own fresh water and sewage utilities. It is the job of the Pacific County Economic Development Council to understand the land and economic needs of the citizens of Pacific County and manage them accordingly.

Economically, Pacific County is limited in their abilities to grow due to their environment, restrictions based on land usage, and resources. Because of Pacific County's remote location in southwestern Washington state, residents are surrounded with lush forests filled with harvestable lumber and marshes that seep into the land from the numerous inlets that dot the coastline. Pacific County's major industries that contribute to the county's success focus on the harvesting of crabs and oysters from the ocean and inlets dotting the coastline, cranberries harvested from the vast swaths of marshland in the county, tourism, and lumber. Many of these industries rely on a steady population of migrant workers that don't officially report to census takers or government entities and live in the county seasonally or permanently to work in these industries (Yirku, 2024). Therefore, demand for housing in Pacific County has historically been dependent on the success of these industries and the amounts of migrant work coming to the county. However, demand for housing across Washington State has been rapidly increasing forcing home buyers to look far and wide for affordable housing opportunities, including housing in Pacific County. Thus, government entities in Washington State are demanding an increase in available parcels for future residents of Pacific County to rise 25% they can accommodate this demand with affordable, safe parcels of land.

Many of the residents who live in Pacific County live surrounding the Long Beach community on the Long Beach Peninsula hugging the Pacific Ocean coastline, in other communities like Ocean Park and Iwalco. These communities benefit from tourism as 1/3 of their collective GDP, with nearly 70% of tourists visiting the county coming from Western Washington and Oregon, with heavy concentrations of tourists visiting from the Seattle, Portland, and Eugene metropolitan areas namely. Thus, the homes on the Long Beach peninsula are developed largely with tourism in mind, with 38% of homes on the Long Beach peninsula consisting of vacation homes (Yirku, 2024). The Long Beach peninsula has seen steady growth since 2000 growing 26.3% since 2000 and with more people living in cities around the US will continue to view

Pacific County as an idyllic place to live to escape the urban lifestyle in favor of the coastal lifestyle, meaning growth is expected in the upcoming decade (Biggest US Cities, 2023).

Environmentally, the land around Pacific County is challenging to develop and make available for purchase by standard means. The largest problems that PCEDC employees counter when trying to make as much land available as possible include restrictions surrounding municipal utilities, physical land restrictions, and pressure coming in from external governmental entities. Wetland management and preservation is a big deal in the State of Washington, requiring the county to ensure land can be built in an area within 300 feet from any standing water (Washington State Department of Ecology). Every parcel available for development needs to be evaluated for wetland delineations to enable someone to develop land within 5 years of said delineation and is done through the hiring of a private consultant. Some cities within the county are happy to be more lenient on this rule before developing in the pursuit of greater parcel inventories, but the county is dependent on land being workable enough to support a foundation for a building. Now, buildings on the Long Beach Peninsula cannot be built above 35 feet high because the peninsula is made of loose topsoil and sand, meaning that multi-family housing is challenging to develop with anything beyond a multiplex. Plus, every parcel must have a water and sewage connection to either a municipality's utilities, or a private well and septic system. Parcels then must have good enough land to develop a well on one end of the parcel and septic on the other end without cross contamination, which is determined through an engineer who visits the site to determine its quality. Lastly, many areas in Pacific County are restricted for land development due to private logging land ownership that constitutes 70% of land (Pacific County EDC, 2023), or conservation efforts from the state side. This means that much of the available developable lands is out of reach of the PCEDC to consider when planning parcel inventory.

Thus, this project needs to factor in the complexity of the day-to-day considerations of a PCEDC employee and ingrain it into their parcel management database. Through consolidating this complexity into several fields that can be used for visualization efforts, the group can spend less time manually evaluating and identifying available parcels of land and can spend more time acting on those parcels to make them worthy of sale. This project will take this complexity and add more context to its complexity with data taking a manual system and automating it as much as possible. Additionally, this data will make it easier for the county to have a surplus of available land to prioritize for affordable development opportunities, enabling citizens of the county to live in Pacific County without breaking the bank as much as possible.

Applicable Similar Use Cases

There are many counties across America that have a public Parcel Viewer that are provided usually at the county level auditor department. A great example of this phenomenon is the [Franklin County Parcel viewer](#) of Columbus, Ohio, sponsored by the Franklin County Auditor's Office. This tool is great at searching through parcel information and getting a list of results from a layer of parcel information. This visualization does not have much ability to give the average user a glimpse into the status of a parcel but does do a good job giving the user the ability to cut through multiple layers of information rather efficiently.

King County has a [parcel viewer](#) as well for the city of Seattle, breaking down parcels and giving the user the ability to select specific parcels for export complete with information that would be relevant to a user. The combination of the easy-to-use UI with data from the assessor department means it is easy for a given user to gain context in the information they need for their own analysis. Once again, the map itself doesn't give a clear indication into any kind of strategy associated with the parcels, only showing the parcel number and a small status bubble that doesn't give a lot of context to the parcels themselves.

The last visualization tool that we found very helpful to give context to visualization tools that could be helpful for the PCEDC to consider is the [National Wetlands Inventory's Wetland GIS map](#), that shows all the wetlands in a specific map overlaid on a google earth visualization. This data of historic wetlands gives great context to the land it is visualizing, succeeds in identifying specific areas that are separate wetlands to best identify boundaries. If this tool were overlaid with a parcel visualization tool, much more context would be derived of the land that was being evaluated for development.

Current State Analysis

- ***Current Problem/opportunity analysis***

The PCEDC has plenty of opportunities to improve on their data management process that is holding them back from fully executing as an organization. This is a result of their small size and operational capacity, where everyone supporting the PCEDC has little opportunity to manually update their inventory of parcels of land available for development. Additionally, while this data is being stored in their database, there is a great opportunity to visualize said data to communicate the value of this data across the PCEDC and beyond, as no permanent solution exists to visualize the inventory database they have currently.

The opportunity that exists for the PCEDC will enable them to manage their data, automate data being entered into their inventory database, and then visualize that information that will enable them to make decisions quickly and efficiently more efficiently. Through using free to use, open-source resources identified in this report, the group will be able to effectively use their data to prioritize the best parcels for development and add more housing opportunities to the citizens of Pacific County. The usage of filtering and data management will enable the PCEDC to get high level views of decision worthy metadata that they can then use to prioritize the right parcels.

- ***Current "As-Is" Systems Overview***

The current system coordinated by the PCEDC is focused on the current mapping of available parcels of land around Pacific County and listing out zoning requirements town over town. This document has been instrumental in enabling the council to organize and manage parcels available for development. It was created manually by Darian Sheldon from the PCEDC and manually updated by the same team. This means that the system to organize and update the information that populates the PCEDC parcel database happens completely manually with no automation built in. This parcel inventory is located exclusively in a Google Sheets document with little barriers to who can utilize the database for their own needs.

The data that fills the PCEDC parcel inventory is a mix of externally sourced data points and internally developed data points. Externally sourced data includes information that is reflected through systems like MapSifter and TaxSifter. These sources give a foundational level of understanding as to what information goes into the identification of a parcel but are manually added by a PCEDC employee after visiting either tool to confirm availability. Manually sourced data includes information regarding land quality, wetland delineation reports, reports on the septic and water systems required for development, and more. This information is either not included in the inventory management system but is used for decision making processes or is included and is manually updated by the PCEDC team.

When it comes to visualization, the PCEDC has very limited current visualization capabilities. Previous Livable City Year teams had built a visualization of the information located within the PCEDC database with effective utilization of GIS information to build a basic visualization for viewing purposes. With this visualization, you can see the locations of parcels in Pacific County, especially around Long Beach, Washington. What this visualization doesn't tell you is the zoning of each parcel, the development opportunities of each parcel including restrictions like wetland distance, sewage availability, and more. These factors are required for making decisions at a high level, and the future success of the PCEDC is dependent on the quick decisions of the council and partners that apply energy and time to viewing the information provided within the parcel inventory.

- ***Current "As-Is" Process Flows***

Currently, the PCEDC inventory database is dependent on the PCEDC employee who can contribute information to the database manually. This means a property's details are up to a PCEDC employee to enter the inventory database. If the employee knows details of a property that needs to be added to the inventory, then they will enter information in the column manually. Likely, there will be unknown information, and they will then have to research the land more. First, they reach out to the Department of Community Development to see if the land usability is known. This will then give them an indication if any information is known about this parcel internally within the Pacific County resources provided to them. Then, once they understand if the land has been assessed, they utilize resources like MapSifter and TaxSifter to confirm the land details of a potential parcel. While the PCEDC revises land details, an assessor can be contracted to investigate the parcel in question to define the livability and developability of the parcel, defining qualitative information such as land quality, wetland encroachment, and more. Finally, the PCEDC employee will ensure that information is added to the notes section outlining the availability of the land and its priority.

This current process is completely manual from beginning to end now. When a given visitor looks at the PCEDC Inventory Database, then they can see the qualitative and quantitative information added by the PCEDC to help them understand details about the parcel and if they can develop it for residential use. The largest problem with this current process is the manual effort it takes to update the inventory database. This means that parcels that are entered elsewhere will be left out of this list and a PCEDC member must manually address that it is missing to re-add it. Also, because the information is added manually, there is a high likelihood

that it will have human errors attributed to the data in question. The PCEDC does not have the personnel or time to maintain an active inventory with this much consistently accurate granularity.

- ***Current “As-Is” Risk Assessment***

The largest risk regarding the current system is the way it is regards the way the current data in the PCEDC inventory database is managed. Now, there are several current fields that are being manually entered into the inventory database after someone who visited a parcel has commented on the livability of the parcel located within the database. This manual assessment could change the valuation of the land and how it is then visualized. Without checks in place with clear definitions on the valuation of each parcel, areas of land can be missed out on as a result. To mitigate this risk, a term inventory can be created to ensure that any future systems created surrounding the PCEDC Inventory database uses each field as it is defined.

Additionally, the current database solution is based entirely on Google Sheets. This means that there aren't a lot of protections in place to safeguard the entered information that are being added to the database, and the gathered information could pose a risk if it is exposed to the outside world in how the information is used, organized, and perceived.

With this property database, the PCEDC has taken this information previously and enlisted the help of the University of Washington in Tacoma to help visualize the data present within this parcel inventory. Thus far, this visualization is advanced in being able to show the end user where parcels are available across Pacific County with a Tableau visualization that enables the user to understand where the data being visualized is located, and gives specific information into the owner type, address, parcel number, sewer, broadband, and price. Additionally, it gives a view into the total amount of parcels available by City, property type, ownership city, and if sewer is enabled for the parcel. The pricing of the parcels is also visualized from smallest to largest in price. With this overlay, the visualization beta gives the PCEDC a high-level overview of what is being located within the parcel database. However, the PCEDC requires this visualization to be more customizable with the filters that they are providing to the end user, showing them more levels of information that can be utilized to decide on the usage of a parcel, such as zoning type, distance to wetlands surrounding the property.

Lastly, there is a risk of the quality of future data being added from external sources. While the manual addition of data confines risk to the specific data being added by a person, any automatic data should have a clear understanding of the information being added into the data system, with the governance of the added data being inputted into the PCEDC Inventory Database. From other sources, the data may also be low quality and may not always be in line with the quality of the sources manually established from the PCEDC. A way to avoid this risk is to research the quality of data coming into the PCEDC and get a baseline standard of any information mapped to the PCEDC Inventory Database.

Future State Analysis

When looking toward the next phases of development of creating a more effective visualization tool, it's imperative that we establish a comprehensive list of future requirements that will guide our efforts in delivering a reliable software platform for the Pacific County Economic Development Council (PCEDC). These future requirements listings will be a dynamic forever evolving visual document, that captures the evolving needs and aspirations of the PCEDC, and the those who will have access to this new visualization tool. It will encompass aspects such as user filters that focus on specific needs and state legislative requirements, emerging technologies that add visualization to livable and non-livable parcels, and ever-changing priorities within the community for instance, factors like the zoning category, proximity to wetlands encompassing the property, and the land's livability and development potential are considerations for the new visualization recommendation. The goal is to create a robust and adaptable digital framework that aligns with PCEDC's overarching objectives of efficiency and reliability, ensuring that the software not only meets current expectations but also evolves to account for future challenges and abrupt change (Wildfire, erosion, etc.). Regular collaboration with stakeholders was essential in refining and expanding the list of specifications that should be considered, fostering a proactive approach to software development that remains responsive to the ever-changing landscape of economic development and housing initiatives in Pacific County.

- ***Future Systems Overview***

As we navigate through the testing phase of our software platform for the Pacific County Economic Development Council, it's essential to provide a comprehensive systems overview. While observing early stages of the implementation phase, the new recommended platform exhibits a structured architecture designed that will streamline data management and automate inventory updates along with a grading scale for livable parcels in hopes of visualizing land parcel information effectively. These recommended tools will include technical support that aids administrative users to effectively add filters and specifications that can be added as an additional layer of visualized information. Throughout the future system assessment, we've undergone rigorous testing protocols to ensure its reliability, functionality, and compatibility with the organization's needs. We also focused on finding multiple solutions that can either be cost-effective or free of cost since digital GIS software and digital visualization software tools can become expensive. As key consultants, it is imperative that we consider the financial and legislative dynamics of the partners we are working alongside to deliver relevancy to our recommendations as project managers.

During this phase, we are actively identifying and addressing any potential issues or areas for improvement. The systems overview encapsulates the integration of open-source resources, automated data entry processes, and visualization tools, showcasing the potential for efficient decision-making. This testing approach allows us to refine the system based on user feedback and emerging requirements, ensuring that the final product aligns seamlessly with the Pacific County Economic Development Council's objectives.

Our commitment to providing a cutting-edge solution is exemplified in our choice of using ArcGIS with the Washington Geospatial Open Data Portal for our recommended future system. This decision stems from a well-considered strategy to leverage the abundance of information updated bi-weekly from the State of Washington. The Washington Geospatial Open Data Portal, which aligns with our project's vision, offers a wealth of publicly available data, mirroring much of the existing information collected by the PCEDC through TaxSifter. This source not only enhances the breadth of our data but also allows seamless integration. The availability of this data through download of shapefiles or API ensures accessibility and ease of consumption. By incorporating these tools as our recommended platform, we are not only embracing state-of-the-art technology but also ensuring that our system is aligned with the dynamic landscape of Pacific County. This integration enables us to provide a future-proof solution that is both technologically advanced and cost-effective, contributing to the overall success of the economic development initiatives in the region.

- ***Future “To-Be” Process Flows***

The seamless integration of ArcGIS with the Washington Geospatial Open Data Portal facilitates an efficient and dynamic process flow for the Pacific County Economic Development Council (PCEDC). The process begins with the exploration of the Washington Geospatial Open Data Portal, a comprehensive repository regularly updated by the State of Washington. Leveraging this data source, the PCEDC gains access to valuable information crucial for decision-making. This data is accurate and updated as frequently as we’ve seen throughout the testing phase.

What sets these platforms apart is the inclusion of a custom API query creation tool, empowering users to tailor their data retrieval process and adapt to the ever-changing requirements of the county. With this tool, PCEDC personnel can set custom parameters and fields, enabling a targeted and flexible approach to data extraction. This capability is pivotal as it allows the PCEDC to selectively obtain information relevant to their specific needs. Once the desired data is retrieved, ArcGIS comes into play, offering a sophisticated environment for visualization, analysis, and interpretation of data. The seamless interplay between ArcGIS and the Washington Geospatial Open Data Portal ensures a streamlined and customizable process flow, empowering the PCEDC to effectively get the full potential of geospatial data for strategic economic development initiatives."

- ***Future “To Be” Risk Assessment***

A pivotal component of our strategic planning for PCEDC is the in-depth 'To Be' risk assessment. Navigating potential challenges and uncertainties that could emerge during the implementation of the innovative software platform aimed at addressing the housing crisis for PCEDC is a huge concern and was carefully considered in our evaluation. Since there is a very intricate nature to our project, for example involving the integration of automated data management, visualization tools, and open-source resources, these intricacies demand a nuanced understanding of potential risks. To mitigate potential risk, we conduct a comprehensive 'To Be' risk assessment where we not only identify specific threats but also gain valuable insights into their potential impacts on the project timeline, budget, and overall success.

Considering the complexity of the proposed changes, potential risks may include technological compatibility issues, user adoption challenges, consistency of new data, and state legislative concerns. By recognizing these potential obstacles, we empower ourselves to develop proactive mitigation strategies. For instance, if technological compatibility emerges as a risk, we can strategize phased implementation or explore alternative solutions. Similarly, anticipating challenges related to user adoption allows us to consider software platforms that carry robust training programs and communication strategies for users, ensuring a smooth transition for the stakeholders involved.

The strategy to implement ArcGIS and QGIS along with the Washington Geospatial Open Data Portal presents significant advantages for the Pacific County Economic Development Council (PCEDC), yet it is not without potential risks. A notable concern is the dependency on technology, where the reliance on these platforms introduces the possibility of system downtimes, technical glitches, or disruptions, which could impact the flow of data processing. Additionally, the bi-weekly updates from the Washington Geospatial Open Data Portal pose a risk of inaccurate or outdated information, potentially leading to discrepancies in the evaluation and decision-making processes. The evolving nature of technology may introduce updates or changes to the chosen platforms, demanding ongoing monitoring and potential adjustments, impacting resource allocation and system maintenance which would need to be assigned to a designated administrator.

When discussing solely using the paid solution of ArcGIS opposed to QGIS, there can be unforeseen costs associated with licensing, maintenance, or additional support that may lead to budget overruns which currently would be priced at \$100 per year for use of a student ArcGIS account. Ensuring a comprehensive understanding of the total cost of ownership is essential to prevent financial challenges.

Lastly, over time key individuals with in-depth knowledge of the system may leave the organization so there should be a plan in place to ensure the order of operations is kept. Adequate documentation and knowledge transfer mechanisms must be in place to mitigate the risk of knowledge loss and operational failures.

Recommendation

Based on the needs of the PCEDC in their attempts to effectively manage the data they use to prioritize development on parcels of land, there are three recommendations we would make to conclude this research. The first is consuming information from an external source to be automatically inserted into a centralized data repository. The second regards visualizing data they use daily in a centralized tool that is easy to use for end users. The third regards updating their processes on their end to create a centralized repository of information for all partners of the PCEDC to input manual data and streamline the parcel prioritization process.

Data Resources

After thorough investigation of the numerous places to consume potential information to automatically hydrate into the Parcel database, it appears that the [Washington Geospatial Open](#)

[Data Portal](#) seems to be the best possible information to include in the database. This information is updated on a bi-weekly basis and contains many of the same existing column information that the PCEDC collects from TaxSifter. This source comes from the State of Washington and is publicly available information that is available to consume by download or by API. If implemented into the current PCEDC database, this API would enable the PCEDC to receive automatic updates from the Geospatial data portal and add it to their database. This platform also contains a custom API query creation tool to enable users to set custom parameters and fields from this data source, meaning the PCEDC can customize what information comes from this source.

Data Visualization Platforms

There are numerous platforms that will enable the PCEDC to best visualize the parcel inventory database as it stands today. However, ArcGIS is from initial research the best industry supported visualization tool for the purpose for the PCEDC today. This tool enables the user to take a dashboard they create on their own side and publish it to a web page utilizing ArcGIS Web Client, complete with filtering opportunities, layers available for selection, and even having information available via mobile. On the side of the PCEDC, the council will require in-depth GIS information included for each parcel, which can be customized within the ArcGIS tool for easy usage. The free version of ArcGIS called QGIS is an open-source community led product that could be a good option as well. ArcGIS offers better opportunities for customization, development support, and can add multiple kinds of layers more efficiently than QGIS.

Engineered Output

The current parcel inventory database includes multitudes of important information that will enable the PCEDC to decide on how to prioritize development parcel versus parcel. However, the best data sources require manual manipulation to ensure that there is enough context to each parcel and have a complete view of the data attached to a parcel. Thus, there needs to be a way to show within the visualized parcel database to show where the parcel is in the assessment process for the PCEDC team. This would indicate if a parcel was missing wetland information, assessment on the usage of the land, and or if the land has been completely evaluated. This custom field is built with custom logic in either Google Sheets or Microsoft Excel to dictate if the parcel has the manual data required to make a judgment on the usefulness of a land parcel. Plus, any other data that would need to be brought in case the Washington Geospatial Open Data Portal doesn't contain enough information would require manual joining on parcel number. Therefore, the ability for some engineered output will give the PCEDC the ability to get enough information within their parcel inventory database.

Additionally, once the parcel is ready to be prioritized, there needs to be a way to assign a priority to the parcel versus others. This would look like a column set up with a formula to dictate, based on the information added by the assessor and other departments, how available this land is to develop. The most developable lands should be indicated separately from moderate developability, and low developability. This could also mean a column to add with logic to indicate if a property is a good fit for multi-family housing, or re-zoning. Therefore, both a

developing priority column and zoning decision column could be interesting to give the PCEDC a different filter to use in their visualization to quickly cut through many factors and focus more attention on larger decisions.

Process Improvements

Seeing how plots of land are required to be manually inspected by an assessor and prioritized by the Department of Community Development, there are multiple points within the property inventory database that are manually managed and are wrangled by a PCEDC employee. Thus, it makes sense to reduce some human errors to enable both assessors and Department of Community Development employees to input information into a shared database that will feed the productivity of the economic development council. This process change would require some upfront investment and require both assessors and Department of Community Development employees to interact with an interface to have limited permissions in manually assessing and prioritizing land. Assessors already provide necessary, valuable, qualitative data that can fuel context for given PCEDC employees. The Department of Community Development can then help tie in administrative processes such as mitigation efforts in getting land developed, taking evaluations for sewage and water, wetland encroachment, and other factors to input qualitative information to contribute to a shared value that would give the PCEDC a preliminary output to consider when deciding what parcels to prioritize for development.

- ***Competitive analysis of visualization platforms***

Through preliminary recommendations given to us by the PCEDC at the beginning of this project, there were 4 top choices we narrowed down to recommending to the PCEDC to utilizing moving forward visualizing their parcel database. Each of these 4 have precedent in the property visualization world and were taken into consideration when evaluating the feasibility of each platform for the needs of Pacific County.

In making our decision to select the ideal *free-to-use* tool for our project at the Pacific County Economic Development Council (PCEDC), a thorough competitive analysis was conducted among QGIS, Google Earth, and TaxSifter/MapSifter. While QGIS offers an open-source and customizable platform with robust geospatial analysis tools, its steeper learning curve may pose challenges, and its 3D visualization capabilities may be limited for our specific needs.

Google Earth, typically known for its user-friendly interface and global coverage, falls short in our vision in terms of providing specific local government data and customization options. After careful consideration, the choice to utilize TaxSifter/MapSifter emerged as the most fitting solution. This decision is anchored in its seamless integration with PCEDC's existing systems, tailoring its functionality to the specific needs of local government, and providing automation and filtering capabilities crucial for efficient data processing and ease of use for newcomers.

The familiarity of TaxSifter/MapSifter among PCEDC employees and partners further solidifies its position as the preferred tool, despite potential cost considerations and a level of dependency on partner integration. With its user-friendly interface and the ability to streamline the input of

qualitative data from assessors and administrative insights from the Department of Community Development, TaxSifter/MapSifter aligns perfectly with our goal of optimizing workflow efficiency and supporting the county's rapid growth and development.

Feasibility Analysis

- ***Economic Analysis***

The economic benefit to automating information coming into the PCEDC database is positive considering the potential time saving effort that can be achieved with automating parcel listings coming into the database, and effectively visualizing said information. This means hours of productivity per week given back to the PCEDC where time would have normally been spent getting a new load of information from TaxSifter to contribute to the inventory sheet. Additionally, process recommendations from this document will keep information about parcels in one place, preventing the need for constant back and forth after a land's assessed worth is complete and stored manually. Finally, the additional layering and filtering will hopefully give the PCEDC the ability to make more informed decisions on the land they are hoping to prioritize development with. This can all be achieved for less than \$200 in software, and time spent working with a Livable City Year (LCY) project from the University of Washington.

- **Benefits Assessment**

Tangible	Intangible
Time added back to PCEDC employees' days.	Sense of security that parcels being added doesn't need to rely on a PCEDC employee.
High quality raw data that may not have been utilized before.	More transparent land value can be derived from better data.
Better visualizations to show to partners and stakeholders.	Less manual decision making will need to be made, and more decision making will be handled by data.

- **Costs Assessment**

Tangible	Intangible
Low costs for higher quality parcel management process.	Process change comes with emotional labor
Time spent on refining parcel data means higher accuracy and less time spent on inaccurate data.	Data APIs could require additional monitoring and support.

- **Technical Analysis** (*Overall Technical Risk: Low*)

The future of the PCEDC's ability to deliver reliable and automatically updated information relies on the APIs they are consuming from. Luckily, there are few APIs that they need to rely on, all of which support larger businesses that use the data directly. For example, information coming from MapSifter or TaxSifter are facilitating government processes that are governed in a separate process funded by the Washington State government. The Washington Geospatial Open Data Portal helps control the flow of reliable real estate information to websites that show property listings and helps with the flow of available property for purchase in the open real estate market. Considering the external stakeholders that rely on this information daily, that reduces the risk of pulling information from these data sources.

The integration of ArcGIS with the Washington Geospatial Open Data Portal was assessed for compatibility and seamless data flow which is one of the highlighted technical advantages compared to its current state. The strategy's ability to maintain data accuracy and consistency, particularly in comparison to the existing TaxSifter data, was scrutinized to identify and address any discrepancies. The scalability of the current system was evaluated to understand its limitations and assess how the new strategy accommodates potential growth in data volume and user base which can be proven to be more effective and reliable long term compared to its predecessor. In the case of a data breach, security measures were scrutinized to ensure that the restricted user access effectively mitigates security risks associated with the access to sensitive information. The user interface and experience were considered to gauge how the integration of

ArcGIS and the Washington Geospatial Open Data Portal enhances the overall usability for PCEDC personnel and those who need access to the information.

As we conclude the technical analysis, a review of existing documentation and knowledge transfer mechanisms was undertaken to ensure that the new system is well-documented, and that knowledge is effectively transferred to mitigate the risk of information loss. This holistic technical analysis approach provides insights into the feasibility, effectiveness, and sustainability of the ideal recommended strategy for the Pacific County Economic Development Council. Regarding both paid and free-to-use solutions, adjustments and enhancements can be made based on new findings to optimize the implementation of the new system, which is a huge plus for scalability and long-term usage.

Operational Analysis

The implementation of automated data retrieval through ArcGIS and the Washington Geospatial Open Data Portal represents a paradigm shift in operational efficiency. This evolution streamlines the identification process, with the integration of the new technologies promising real-time access to parcel data on a bi-weekly basis which is more frequent than the previous operation timeline.

The automated nature of the system also minimizes manual efforts previously conducted by Darian Sheldon, allowing PCEDC personnel to allocate their time more strategically. The geospatial evaluation capabilities introduced by ArcGIS promise to enhance the operational landscape, facilitating comprehensive assessments of parcels by incorporating zoning, sewage availability, and even additional notes such as a grading scale for parcels focusing on livability when evaluating levels of erosion due to wetlands.

From an operational standpoint, the strategy aims to optimize decision-making processes by providing a more user-friendly interface which includes dynamic visualizations, enabling more informed and efficient workflows. By aligning with the operational needs of the PCEDC, the proposed future state seeks to not only enhance overall operational efficiency but also empower the organization to navigate the dynamic landscape of economic development effectively with increased scalability. Looking at the way the PCEDC uses the property inventory database today, the above proposed future state would enable the council to use this information more in day-to-day operations.

Legal Analysis

Pacific County sits in a part of Washington where it's economic future is dependent on the debates that are happening at the state level regarding the usage and allotments of land for development. There are numerous laws and policies that are considered regarding parcel usage and allotment such as HB 2321, SB 5457, and more. These laws restrict the county's abilities to develop any more than an average land parcel that is currently available to a given user. Thus, the knowledge of what laws will change the future of the PCEDC's ability to develop available parcels around Pacific County is crucial.

Political Analysis

The State of Washington is recommending the growth of affordable parcels in Pacific County to increase by 25% in the coming years. Pacific County is considered a specific target from the state to develop more land than is considered normal growth. With the passage of HB 1245 in January of 2024, Single family lots zoned for one house can now be split into two for two houses, meaning growth is now more possible with the limited land available in Pacific County (Cohen, 2024). However, the state makes it difficult to enable the county to designate more land because of their restrictions creating a city with the land that they have allotted. When the county looks at each of their communities to consider development, the largest barrier to development is their ability to build on land that isn't connected to a municipality utility system with water and sewage hookups. Because Pacific County is restricted to the land they currently have designated in separate communities, the state's restriction on requiring 25,000 residents to be considered a city worth of municipal resources to expand sewage and water treatment makes the information coming from their parcel inventory more important than ever.

Conclusion

In conclusion, working alongside PCEDC for this project has identified critical insights and has helped our efforts in providing a recommendation for future optimization. The analysis of the current state emphasized the challenges faced by the PCEDC in managing and prioritizing land parcels, crucial for the country's economic growth, land erosion roadblocks, and long-term development to account for population growth as well as homelessness in the area. The envisioned future state outlines a transformative approach, leveraging a more detail oriented technological tool such as ArcGIS, QGIS, and the Washington Geospatial Open Data Portal. The proposed system promises to automate data entry, enhance visualization, and streamline decision-making for the PCEDC.

The operational analysis, considering the day-to-day functions of the PCEDC, highlights the potential for increased efficiency through the adoption of the recommended strategy. The detailed examination of the economic, environmental, and demographic factors influencing Pacific County establishes the context for the project. Challenges such as wetland management, municipal restrictions, and private land ownership complexities have been thoroughly considered.

Process improvements, including reduced manual inspection and shared databases, are proposed to alleviate human errors and enhance collaboration between assessors and the Department of Community Development. The technical analysis indicates low overall technical risk, with considerations for scalability, compatibility, and user experience. The legal analysis underscores the importance of staying informed about evolving state laws and policies governing land development in Pacific County.

The recommendations throughout this project, including the adoption of advanced technologies, process enhancements, and continuous awareness of legal dynamics, are poised to equip the

PCEDC for effective land management. By embracing these insights, the PCEDC can position itself strategically to navigate the complexities of land development in Pacific County, meeting the demands of a growing population and contributing to the county's economic prosperity. This comprehensive report serves as a guide for the PCEDC's future endeavors, setting the stage for impactful decision-making and the potential pursuit of a Livable City Year (LCY) initiative from the University of Washington to bring these recommendations to fruition.

Appendix

Visualization Technology Decision Matrix							
	Name	URL	Price	Open Source	Filtering	Map Vis	Notes
1	QGIS	https://qgis.org/en/site/	Free	Yes	Yes	Yes	Has a massive online community.
2	ArcGIS (Creator)	https://www.esri.com/en-us/arcgis/products/arcgis-online/buy	\$550/year (100/year student)	Yes	Yes	Yes	This is the standard for large counties, support functionality.
3	Tableau Public	https://public.tableau.com/app/discover	Free*	Yes	Yes	Yes	Current solution, highly customizable dashboard.
4	Power BI	https://www.microsoft.com/en-us/power-platform/products/power-bi	Free**	Yes	Yes	Yes	A good solution, but requires info to be stored on cloud.

Source Data Automation Decision Matrix						
	Name	URL	Price	Open Source	API?	Notes
1	Taxsifter	https://www.co.pacific.wa.us/assessor/index.htm	Free	Yes	No	Requires an API to be developed to consume.
2	Oxylabs	https://oxylabs.io/products/scrapper-api/real-estate/redfin	\$10-99/month	No	Yes	This option will hypothetically get highest quality data, but needs

						testing, and a legal analysis.
3	Washington Geospatial Open Data Portal	https://geo.wa.gov/datasets/e8f2df3ed92843738f3dd778e92e93fc/explore?location=46.488835%2C-123.311594%2C10.00	Free	Yes	Yes	The best free option, has a custom API feature.
4	ReGrid	https://regrid.com/parcels	\$375/month	No	Yes	Has nationwide parcel data, data quality is very high, but is very pricey.

Current State Property Inventory				
Towns in Pacific County				
<i>Field</i>	<i>Data Type</i>	<i>Definition</i>	<i>Data Source</i>	<i>Automatable?</i>
Property type	String	Indicates if the property is "for sale", "surplus", "vacant", "derelict", "tax delinquent", or "foreclosed"	PNWR Realty Group MLS	No
Land use	String	Indicates how the land is currently used at time of entry	Taxsifter	Yes (Washington Geospatial)
Parcel	Number	Indicates parcel number	Taxsifter	Yes (Washington Geospatial)
Address	String	Defines the physical address of the parcel with house number and street name	Taxsifter	Yes (Washington Geospatial)
Owner type	String	Indicates who owns the parcel, either a private owner or county owner	Taxsifter	No
Price	Number	USD price of the property, can be a	PNWR Realty Group MLS	Yes (Washington Geospatial)

		numeric value or NA for null		
Zoning	String	Lists the type of zoning provided for each parcel, can contain null values	Taxsifter	Yes (Washington Geospatial)
Broadband	String	Shows available broadband options for the property in comma-delimited format, can be blank for null	PNWR Realty Group MLS	No
Acreage	Number	Number with decimals indicating how many acres are available for a plot of land	Taxsifter	Yes (Washington Geospatial)
Notes	String	Manually entered notes outlining the type of property or the link to the listing if it is for sale	Manual	No

Future State Property Inventory				
<i>Field</i>	<i>Data Type</i>	<i>Definition</i>	<i>Future Data Source</i>	<i>Effort</i>
Property type	String	Indicates if the property is "for sale", "surplus", "vacant", "derelict", "tax delinquent", or "foreclosed"	PNWR Realty Group MLS	Manual
Land use	String	Indicates how the land is currently used at time of entry	Washington Geospatial	Automated, Derived with logic
Parcel	Number	Indicates parcel number	Washington Geospatial	Automated
Address	String	Defines the physical address of the parcel with house number and street name	Washington Geospatial	Automated
Owner type	String	Indicates who owns the parcel, either a private owner or county owner	Taxsifter	Manual

Land Value	Number	Geospatial data's tracked value	Washington Geospatial	Automated
Building Value	Number	Geospatial data's tracked value	Washington Geospatial	Automated
Price	Number	USD price of the property, can be a numeric value or NA for null	PNWR Realty Group MLS	Manual
Zoning	String	Lists the type of zoning provided for each parcel, can contain null values	Washington Geospatial	Derived
Broadband	String	Shows available broadband options for the property in comma-delimited format, can be blank for null	???	N/A
Acreage	Number	Number with decimals indicating how many acres are available for a plot of land	Washington Geospatial	Automated
Notes	String	Manually entered notes outlining the type of property or the link to the listing if it is for sale	Manual	Manual
Utilities	String	Outlines the types of utilities enabled for the property	PNWR Realty Group MLS	Manual
Sewer	String	Outlines if sewer is available for development	PNWR Realty Group MLS	Manual
Water	String	Outlines if water connection is available for development	PNWR Realty Group MLS	Manual
Housing type	String	Indicating the housing type of single family, duplex, triplex, multiplex, etc.		Derived with logic
Flood History	String	Will show any history of flooding for a specific parcel.	FEMA Flood Map Service Center	Manual
Lot Width	Number	Width of lot in feet	Pacific County Assessor (2024 Land Information)	Manual
Lot Depth	Number	Depth of lot in feet	Pacific County Assessor (2024 Land Information)	Manual
Land Influence	String	Describes what is available in the parcel, will define if site is clear or if there are any obstructions	Pacific County Assessor (2024 Land Information)	Manual

Livable?	String	Yes or no binomial to indicate if a parcel is livable or not. Determined by PCEDC with logic built in.	Automatic Logic in Google Sheets	Manual
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