Pierce County’s Next Generation Permitting

URISA Exemplary System Government Award
Pierce County
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A. System

1. Name of the System and ESIG™ Award Categories

   Pierce County’s Next Generation Permitting System
   Category: Single System

2. Executive Administrator Letter

   See attachment A

3. System Summary and Why It Is Exemplary

   The construction industry is a key part of Pierce County’s economy, which means county government must find ways to quickly and efficiently process building permits. However, severe budget and staff cuts have made it difficult for the Planning and Land Services (PALS) department to keep up with demand. Pierce County has therefore embraced the latest mobile and GIS technology to create a “Next Generation Permitting” system. This system incorporates an improved Web portal, permit e-submittals, field inspection mobile app, and Skype inspections to improve customer service and streamline outdated business processes. A dedicated team of technology and planning employees sought to overcome several major challenges, including revolutionizing a paper-based permitting system. The team utilized a number of cutting edge technologies in this initiative, including: Skype, Apple iPads, open source mapping technology, and open source mobile app tools.

   Next Generation Permitting has resulted in a number of exemplary achievements:

   - **Online Permitting Portal**: The improved permitting portal provides customers with the self-service tools, available 24x7, they need to find answers for routine questions, research public permit documents, and start the permitting process. The time it takes to process a permit has been streamlined because citizens are better prepared with information beforehand. Web enhancements have reduced the number of citizen visits and phone calls to county offices by 25%, and reduced the average consultation from 90 to 20 minutes.

   - **Live Chat and e-Submittal**: Live online chat allows customers to ask questions without waiting on hold or having to visit the public counter. Users can print out a copy of the copy of the live chat conversation, as well as get electronic versions of important documents. The technology also allows a clerk to provide personal service to more than one customer at a time. Instead of requiring customers to fill out complex forms, the e-submittal process allows customers to choose from a list of general categories. This allows staff to better tailor each permit application to the needs of the customers.

   - **Field Inspection Mobile App**: The revolutionary Field Inspection App allows inspectors to access inspection requests, building plans and permit data from their iPads. GIS mapping and calendar tools make it easy for an inspector to sort requests by priority and to plan out optimal routes. Staff can easily enter inspection results, take photos, all of which are immediately uploaded to the County’s central database. Customers can receive either
electronic or printed copies of their inspections and request a re-inspection for the same or next day. Staff can theoretically conduct up to 70 more inspections a week – or 3,500 more per year! And most importantly, local builders have estimated time savings of upwards of 5 working days over the typical construction time for a new home thanks to faster access to inspection reports.

- **Skype Inspection Program**: Online inspections using free programs like Skype or Facetime have been a tremendous success in terms of saving staff time, money and gas. Inspectors are able to do inspections from the comfort of their desk, rather than having to physically visit a remote job site to complete a minor mechanical inspection. So far in 2014, PALS has saved about 2000 miles of driving and about 400 gallons of gas.

These innovations have improved service delivery while increasing transparency of the permit process. Pierce County is leading innovation nationally and has received requests from multiple agencies, including the States of New Mexico, Arizona, and Oregon about how to revolutionize their own permitting programs.

4. **User Testimonials**

   See attachment B

B. **Jurisdiction**

1. **Name of jurisdiction**

   Pierce County, Washington

2. **Population served by the organization/agency**

   The population of Pierce County is approximately 821,300, according to United States Census Bureau estimates.

3. **Annual Total Budget**

   Pierce County’s proposed 2015 budget is $928 million.

4. **Chief Elected Official**

   Pat McCarthy, Pierce County Executive

   [pcexecutive@co.pierce.wa.us](mailto:pcexecutive@co.pierce.wa.us)

   930 Tacoma Ave S, Room 737

   Tacoma, WA 98402

5. **System Contact**

   Dennis Hanberg, Planning and Land Services Director
C. System Design

1. What motivated the system development?

As the construction industry is a key part of Pierce County’s economy, county government is dedicated to efficiently conducting building inspections. However, the economic downturn led to the County workforce being reduced approximately 460 staff (out of 3,100). Buildings were closed, cost of living salary adjustments were zeroed and major programs were cancelled. The Planning and Land Services Department (PALS) was especially hit hard, with nearly half the staff being laid off and the rest being asked to take unpaid furloughs. These cuts made it difficult for planning staff to quickly conduct building inspections or provide environmental and engineering reviews. While the local construction industry is recovering, County leaders have recognized that a slow inspection process impacts economic development and job growth. Additionally, the Master Builders Association and Economic Development Board expressed serious concerns at how long it was taking to complete new permits and inspections. Finding a way to avoid inspection delays became a top priority for county management.

An additional goal was permit data accessibility and greater access to all public permit records. Several years ago, the PALS Department performed an analysis of un-permitted development in the County. Permit records were mapped and compared with a GIS (Geographic Information System) data layer of changes/additions to the building structure data set. The department discovered a large number of unpermitted structures which could pose community safety and/or health risk because the structures were not built to code or properly inspected. Because the new self-help tools included an ability to search all permit records back to 1985, citizens can search a house’s permit activity and inspector comments before purchasing the property. These historical documents protect citizens from possible risk and liability by unwittingly purchasing property with non-permitted construction.

A project team made up of planners, inspectors and technology professionals began investigating ways to streamline the outdated system. Land permitting is a complex process because of the many local, state and federal regulations. The project team also recognized that many properties have unique land use requirements, making it nearly impossible to fully automate the entire permit process. However, the team could improve the process in two key ways:

- On the customer side, Pierce County could offer more self-service tools to make it easier to start the permitting process, research property information or find important records online. Self-help tools would reduce the face-to-face time between permit technicians and applicants by shifting staff from answering informational questions to reviewing/approving permits and solving difficult development questions. Also, the use of Live Chat allows
citizens to online chat with a permit technician which increases staff efficiency by allowing more than one customer to be served at a time. These improvements optimized the permit process to avoid customer service backlogs.

- For the permit inspectors, the availability of free video software such as Skype or Facetime could also make it easier for customers to complete simple inspections. In terms of staff productivity, the Field Inspection app promised to speed up a manually intensive process.

These innovations have been implemented and resulted in faster turnaround times, lowered costs per inspection, and less paper. By revolutionizing the permit inspection process, the County Executive’s goal to create the “Best Permitting Agency in the State” a reality!

2. **What specific service or services was the system intended to improve?**

   The system was designed to improve customer service and reduce the time needed to process permits. The County conducted a time study to look at what planning services were being provided, and how much those services should cost. Surprisingly, the PALS study showed that a significant amount of time was spent answering hundreds of routine questions from the public. Staff often spent 90 minutes or more per customer answering standard questions about zoning, building regulations and environmental laws – free of charge.

   A second motivation was how to streamline a traditional paper-based inspection system. The old process was manually intensive. Inspectors used to carry stacks of printed project requests into the field, which was both time consuming and expensive. Customer service suffered as customers waited several days to request a re-inspection due to paperwork delays. Inspectors spent significant time prioritizing requests, plotting their inspection routes, and entering inspection results into the planning records database.

3. **What, if any, unexpected benefits did you achieve?**

   The Next Generation Permitting system has not only achieved the initial project goals but has also led to the following unexpected benefits:

   - **Improved Sustainability:** The Field Module app allows PALS to manage County resources in a more efficient and sustainable manner. By moving away from a paper system, the department is saving more than 171,000 sheets per year. In a similar fashion, self-service tools have reduced the need for customers to travel to County offices to start the permitting process. Online permitting has eliminated an estimated 3,000 customer vehicle trips per year.

   - **Expanded Organizational Capacity:** Previously, inspectors came to the office each morning to print maps and documents for each inspection. Now inspectors can balance workloads and re-assign inspections as needed. This provides inspectors greater control over their schedules and allows them to spend more time in the field.
- **Optimized Routing**: Adding the map interface to the mobile app, allows inspectors to view all inspections in an area and route themselves in the most efficient manner. There is less back-tracking and driving as a result.

- **Fast Turnaround for Developers**: When a developer waits for a re-inspection, it causes costly delays in the building process and building occupancy. The mobile app allows developers to quickly fix a problem and get a re-inspection the same day which is very helpful when a new home mortgage closing is pending.

- **Client Reports**: Developers are using the status reports and historical permit and inspection information to create client reports. This is improving service to their clients in Pierce County.

- **Permitting Compliance/Customer Protection**: Because the new self-help tools included an ability to search all permit records back to 1985, citizens can search a house’s permit activity and inspector comments before purchasing the property. This protects citizens from possible risk and liability by unwittingly purchasing property with non-permitted construction.

4. **What system design problems were encountered?**

   The project team needed to find a way to create simpler, more intuitive online tools for customers. The existing website needed to be updated so that customers could easily search, view and print permitting records, in addition to starting a new permit. The team also used innovative mobile technology by adding QR codes to all permit documents. These codes are scanned by smart phones and link to a specific permit record. GIS technology was used to perform spatial process and combine reporting from 25 data sets into an easy-to-view summary of a parcel’s land characteristics.

   While designing the Field Inspection module, the IT team addressed issues of how to handle data when wireless connections are lost and how to download large record sets. Overcoming these technical challenges was significant, but the biggest lesson learned while leading this innovation involved the human element.

   The County’s permit inspectors were accustomed to using paper forms for their work. Rarely did they even use email. They were not experts on either iOS or Windows operations, and most did not have personal smartphones. The Planning and Land Services (PALS) Director understood that introducing the inspectors to a fully digital work process would take time and patience. The transformation started by including the inspectors in the app design process. They helped design the user interface and described the type of functionality that would be most useful in the field. Not being familiar with technology, the inspectors had to “envision” how this new tool would work and there were those who seriously doubted the new system would ever work. Including the inspectors in the development process helped ensure the app interface was simple and highly functional.

   The inspection team also worried about a steep learning curve when it came to using iPads instead of paper forms. To address this concern, the PALS Director purchased the iPads a month in advance and distributed the devices to the team. IT staff provided training and used simple apps such as
Solitaire and even Angry Birds to help inspectors become familiar with the device’s operation. Success in this technology transition was all about communication. The team was repeatedly coached on the need for change, how the change would occur, what tools they would use and how the outcome would benefit the county and the community. The inspectors were allowed to ask questions, voice concerns and “kick the tires” of the new system in advance of the go-live date. The project leaders contributed to the team’s success by breaking down the change into manageable steps while communicating a clear and consistent message. Today, the inspectors are advocates and evangelists for paperless, mobile business processes!

5. What differentiates this system from other similar systems?

Pierce County is one of the first local government organizations to fully automate the permitting process for both staff and customers. While a number of city and county governments offer online permitting and payment tools, Pierce County’s Permitting Portal has the following unique features:

- Permit dashboard with review times
- Display of lobby activity and expected wait times
- An interactive list of scheduled inspections
- Online submittal of any type of project
- Online availability of permit-related plans and documents

The project team also researched mobile inspection apps but could not find anything that remotely offers the features or functionality that the Field Inspection app delivers. The app sets new standards by integrating existing County systems such as County’s PALS permitting system, GIS mapping, and Outlook with a mobile inspection app. Equally important is that Pierce County is one of the first local agencies in the nation to conduct Skype inspections and fully automate inspections on mobile devices.

The final result of all these efforts have been a total success. The project has increased customer satisfaction, expanded service capacity, improved service delivery, increased government transparency, and fostered stronger employee engagement. Both the Field Module and Skype Inspection process have resulted in faster turnaround times, lowered costs per inspection, and more sustainable practices. The project team did a remarkable job of overcoming fear of change while bringing needed innovation to an important county business function. Their many ideas combined together to achieve efficiency and economy.

D. Implementation

1. What phases did you go through in developing the system?

   **Phase 1:** This phase took place from 2011 through 2012. Starting with the current PALS website, the team designed and implemented self-help tools to allow customers to research properties, apply for a permit, upload supporting documents, and pay fees online. Online improvements also included
the ability for customers to get e-notifications about a permit’s progress.

**Phase 2:** The second phase involved creating the mobile inspection tools. This phase was completed in late 2013-early 2014. Pierce County has developed many smartphone apps for public services and internal needs, but the Field Inspection App was one of the most complicated to create. The app needed to automate a complicated business process, integrate a number of County systems such as email and GIS, and dynamically updated a large production database. Overcoming these technical challenges was significant, as was the fact that many of the County’s building inspectors were rather uncomfortable with technology. The project team was very aware that inspectors would have concerns about using iPads instead of paper forms. To address this, the team recruited “change champions” and heavily involved them in every step of the project. In the end, the inspectors were very impressed at how the app allowed them to easily prioritize requests, file inspection results, and map their daily routes. The project has fostered closer teamwork not just between IT and PALS, but also between the building and site development inspectors. All of the stakeholders felt their views and input were respected.

**Phase 3:** As a parallel effort to the Field Module, technology and planning staff investigated whether existing video chat programs could be used for minor inspections. Pierce County is a large geographic area (1,676 square miles including Mt. Rainier and several islands), the team was especially interested in using mobile technology to better serve customers in remote areas of the County or on islands. A main advantage to using a program like Skype is that it is free for the customer and easy to install. The program has been such a success that the County is now using Skype to conduct more complicated inspections, and pre-development interviews with customers. If the popularity of the program continues to grow, Skype video chat will eliminate a sizable number of customer trips to County offices and county staff making trips to job sites. Skype is now being used for pre-development meetings so that customers no longer have to travel to County offices. Finally, PALS launched the live chat feature at the end of Phase 3.

2. **Were there any modifications to the original system design? Why? What?**

   Based on feedback from inspectors, the project team made a number of modifications to the original app design. The team changed how inspection details could be viewed and added a drag-and-drop feature for organizing tasks. More robust map features were also added. Finally, the team created an “offline” mode so that the app could properly store data when wireless connections were lost.

**E. Organizational Impact**

1. **What user community does the system serve and how?**

   Next generation permitting serves the entire Pierce County community of more than 820,000 residents. Typically, PALS receives 9,000-12,000 citizen visits per year. Citizens generally request basic information about property zoning and development constraints, as well as engineering and
environmental reviews for land developments. The system is also designed to serve the needs of local land developers and construction businesses, as well as non-profits such as Habitat for Humanity.

2. **What are the ultimate decisions/operations/services being affected?**

The following table and screenshots show the benefits of online permitting tools:

<table>
<thead>
<tr>
<th>Permit Process</th>
<th>Online Self Help Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Can I get a permit?</td>
<td>The About My Property self-help enhancement utilizes GIS technology to report important details about a specific property including: zoning rules, fire and school districts, flood zones, and natural environment conditions. The Tell Me More link gives more information about these topics.</td>
</tr>
<tr>
<td>2. Apply for a permit</td>
<td>With just a click, applicants can apply for any type of remodeling or building permit. An online form to describe the project can be quickly completed, saving staff time.</td>
</tr>
<tr>
<td>3. Provide supporting documents</td>
<td>Digital site plans, construction drawing and other documents can be uploaded with the permit information.</td>
</tr>
<tr>
<td>4. Review permit request</td>
<td>Applicants review the permit request for submitting and can still change any information.</td>
</tr>
<tr>
<td>5. Pay fees online</td>
<td>This tool shows the cost of the permit and allows applicants to make online payments in a convenient and secure manner.</td>
</tr>
<tr>
<td>6. View permit status</td>
<td>Citizens can view their own permit or any permit in the county. This allows neighborhoods to be aware of ongoing developments in their area.</td>
</tr>
<tr>
<td>7. Track permit progress</td>
<td>An informative permit screen shows the permit’s address, status, application date, expiration date, project name, work description, completed inspections, etc.</td>
</tr>
<tr>
<td>8. Request an inspection</td>
<td>Once work is completed, an inspection can be requested online. The results of the inspection, as well as comments, are shown online.</td>
</tr>
<tr>
<td>9. Easy QR link to the permit</td>
<td>The permitting paper documents sent to applicants have QR codes that when scanned with a mobile device brings up a permit’s online record for viewing additional information.</td>
</tr>
<tr>
<td>10. E-notify</td>
<td>At every step in the permit process, the system will automatically send an email to the applicant notifying them of a change to the permit.</td>
</tr>
<tr>
<td>11. Ask a Question/Live Chat</td>
<td>If an applicant needs additional help with a permit, there is an online form to complete and a technician will quickly answer. Live online chat is also available during business hours.</td>
</tr>
</tbody>
</table>
Figure 1: Pierce County Permitting Portal Homepage

Figure 2: About My Property Mapping Tools
Figure 3: Permit Review Dashboard (Showing Completed Permits)

Figure 4: Ask the Development Center Form
The following table and screenshots outline how the Field Inspection App and Skype inspections have streamlined business processes:

<table>
<thead>
<tr>
<th>Inspection Process</th>
<th>Mobile App/Skype Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scheduling</td>
<td>The app’s clearly shows a list of scheduled inspections by date. Inspections can also be sorted by priority, and inspectors can also use the app to balance workloads.</td>
</tr>
<tr>
<td>2. Route mapping</td>
<td>The app’s interactive mapping tools allow inspectors to find the most optimal route to any inspection site. Inspectors can also see if inspection sites are near each other and can reschedule accordingly.</td>
</tr>
<tr>
<td>3. Background Research</td>
<td>Inspectors can use the app to view all the documents relating to an inspection, including permit records, holds, and building plans.</td>
</tr>
<tr>
<td>4. Report Entry</td>
<td>Instead of having to fill out paper forms, staff can file their inspections electronically. The app then sends inspection results directly to the County’s database. The app allows users to enter “canned” comments to save time.</td>
</tr>
<tr>
<td>5. Photo Capture</td>
<td>The mobile app allows inspectors to take pictures using their iPad instead of having to carry a separate camera.</td>
</tr>
<tr>
<td>6. Customer Notification</td>
<td>Customers can receive either an electronic or printed copy of inspection results almost immediately after the inspection is completed.</td>
</tr>
<tr>
<td>7. Re-inspections</td>
<td>Thanks to the app, it’s now fairly common for a customer to be able to fix a minor problem and reschedule the final inspection for the same day.</td>
</tr>
<tr>
<td>8. Remote Inspections</td>
<td>The Skype program allows inspectors to complete routine inspections (i.e., a water heater inspection) from the PALS office, saving significant time for staff and customers.</td>
</tr>
<tr>
<td>9. Pre-development</td>
<td>Skype can also be used to conduct pre-development interviews.</td>
</tr>
</tbody>
</table>
Figure 5: Inspection Scheduling

Figure 6: Inspection Route Mapping
Figure 7: Canned Comments for Inspection Results

Figure 8: Background Documents
3. **What were the quantitative and qualitative impacts of the system?**

The Permitting Portal has resulted in the following successes:

<table>
<thead>
<tr>
<th>For the Applicant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time Savings</strong></td>
</tr>
<tr>
<td>Online tools save trips, reduce lobby waits, and can speed up construction times.</td>
</tr>
<tr>
<td><strong>Get Answers Faster</strong></td>
</tr>
<tr>
<td>Citizens can easily answer their self help question with the online system.</td>
</tr>
<tr>
<td><strong>Greater Dialogue</strong></td>
</tr>
<tr>
<td>Direct contact with a permit tech fosters conversation with the citizen.</td>
</tr>
<tr>
<td><strong>Green Benefits</strong></td>
</tr>
<tr>
<td>Reduce travel time to county offices and save paper and gas.</td>
</tr>
<tr>
<td><strong>Reducing Risk/Liability</strong></td>
</tr>
<tr>
<td>Buyers looking to purchase property can ensure that there are no hidden liabilities from non-permitted construction.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For the County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduced Costs</strong></td>
</tr>
<tr>
<td>25% building related submittals were filed online in 2.5 months, each month seeing a 10% increase.</td>
</tr>
<tr>
<td><strong>Fewer Visits to County Offices</strong></td>
</tr>
<tr>
<td>Reduced the number of citizen visits and phone calls to county offices by 20%!</td>
</tr>
<tr>
<td><strong>Timely Revenue Posting</strong></td>
</tr>
<tr>
<td>50% of permit revenue are now being submitted online.</td>
</tr>
<tr>
<td><strong>Improved Employee Productivity</strong></td>
</tr>
<tr>
<td>Permit techs and plan reviewers have moved from answering questions to a quality control role for documents submitted online. They facilitate the process via email and provide quick response to more complex questions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For the Community</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data transparency</strong></td>
</tr>
<tr>
<td>All permit documents are visible to citizens, which increases transparency.</td>
</tr>
<tr>
<td><strong>Business support</strong></td>
</tr>
<tr>
<td>Engineers and land developers are leveraging the system to generate status reports for their clients.</td>
</tr>
</tbody>
</table>
The Mobile Inspection App and Skype Inspections have led to the following successes:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Stewardship</strong></td>
<td>The Field Module app allows PALS to manage County resources in a more efficient and sustainable manner. By moving away from a paper system, the department is saving more than 171,000 sheets per year. Furthermore, the new app is saving inspectors a significant amount of time spent manually entering results.</td>
</tr>
<tr>
<td><strong>Improved Productivity</strong></td>
<td>The field module has saved 3,000 man hours in duplicate entry by eliminating about 35-40 minutes per day per inspector. Now that inspectors can spend more time in the field, the number of carryover inspections (inspections not completed on the scheduled date) has dropped from 16% to 2%!</td>
</tr>
<tr>
<td><strong>Public Service</strong></td>
<td>Providing timely inspections is very important for the local economy. The app allows customers to confirm their inspection by email, receive an electronic copy if they wish, and schedule a re-inspection the same day.</td>
</tr>
<tr>
<td><strong>Service Delivery</strong></td>
<td>The Field Module has optimized business processes in several ways. Inspection schedules are automatically tracked, GIS mapping makes it easy to plan routes, and inspection results can be immediately uploaded to County databases.</td>
</tr>
<tr>
<td><strong>Reducing Risk/Liability</strong></td>
<td>Buyers looking to purchase property can ensure that there are no hidden liabilities from non-permitted construction.</td>
</tr>
</tbody>
</table>

4. **What effect has the system had on productivity?**

Once the PALS public website was updated with self-help tools, the team calculated lobby visits were reduced by 20%, and the PALS department saved approximately one FTE position. Web visits increased by 7% over the previous month and over 1,000 new visitors viewed the site. The department gained cost efficiencies and citizens reduced the cost of traveling to and waiting at county offices by using these self-help options. Self-service tools also freed up staff time to deal with more complex permitting issues rather than troubleshooting common questions.

The Field Module allows inspectors to conduct up to 70 more inspections a week – or 3,500 more per year! Equally important is how the Field Module makes it easier for customers to request
inspections when it is most convenient. Before deploying the Field Module, staff could accommodate customer requests for a specific inspection time about 84% of the time. Now, that percentage is closer to 98%! And most importantly, local builders have estimated time savings of upwards of 5 working days over the typical construction period of a new home thanks to less wait time and faster access to inspection reports.

The Skype Inspection also continues to be incredibly popular with staff and customers. Since the program began in 2014, PALS has saved about 2,000 miles of driving and about 400 gallons of gas. For example, a simple inspection was recently scheduled on remote Crystal Mountain, which is approximately 70 miles from County offices and requires driving a 3 hour round trip. The inspector could schedule the Skype inspection at a convenient time for the homeowner and avoid 3 hours of driving. This easily saves over 50% of the cost of these long distance inspection costs. The program has been such a success that the County is now using Skype to conduct more complicated inspections and pre-development.

**5. What, if any, other impacts has the system had?**

The Next Generation Permitting system has modernized the PALS organization and enabled County employees to be more productive. This productivity improvement increases customer service and customer satisfaction which makes work more enjoyable for staff. The PALS Department is routinely complimented on their efficiency and effectiveness. Local land development companies and builders are appreciative of the website improvements which allow data access 24x7, faster help for difficult permit situations and re-inspections that speed their project completions. Please see section D-3 regarding the unexpected impacts of the system.

**6. How did the system change the way business is conducted with and/or service delivered to clients?**

The Next Generation Permitting System has greatly streamlined how Pierce County delivers a critical public service. Pierce County has found ways to improve service beginning with the time a permit is filed until the final building inspection is completed.

Previously, planning staff spent significant time answering routine questions, researching property information, or helping customers start the permitting process. Customers often needed to spend several hours at County offices in order to get help, with the average consultation taking 90 minutes or more. Filling out paper forms was time consuming for everyone involved. The new system allows customers to start the permitting process whenever it is convenient for them. Customers can file for a permit from the portal or conduct parcel research using the About My Property tool. This means that citizens are better prepared with information before they meet with a planning expert. The live chat feature provides another way for customers to get answers besides calling the help line or visiting county offices. All of these improvements have reduced the number of citizen visits and phone calls to county offices by over 25%. The average consultation time is now about 20 minutes.

Customers also appreciate the e-submittal process which allows them to send plans and supporting documents electronically. The following photo from local utility Puget Sound Energy shows the
difference between how Pierce County processes conditional use permits versus neighboring cities. Instead of having to fill out dozens of forms, the client only needed to submit a USB drive.

![Image](image.png)

*Figure 9: Puget Sound Energy e-submissions*

The Field Inspection App has also greatly improved an outdated and manually intensive system. Inspectors used to carry stacks of printed project requests into the field, which was both time consuming and expensive. County staff also needed to carry several pieces of equipment with them, including a camera and GPS for finding inspection sites. Service suffered as customers waited several days to request a re-inspection due to paperwork delays. Inspectors spent significant time prioritizing requests, plotting their inspection routes, and entering inspection results into the planning records database. Inspectors can now access all the information they need from their mobile devices. Built-in GIS mapping and calendar tools make it easy for an inspector to sort requests by priority and to plan out optimal inspection routes. Staff can easily enter inspection results, choose from pre-set responses, take photos, and immediately upload data to the County’s central database. This saves each inspector around 45 minutes of data entry per day. Meanwhile, customers can have inspection results emailed to them immediately and can easily schedule re-inspections.

The Field Inspection app allows inspectors to conduct up to 70 more inspections a week – or 3,500 more per year! Equally important is how the Field Module makes it easier for customers to request inspections when it is most convenient. Before deploying the Field Module, staff could accommodate customer requests for a specific inspection time about 84% of the time. Now, that percentage is closer to 98%!

Finally, the app saves Pierce County from having to print more than 171,000 sheets of paper a year. The following photo shows how much paper inspectors used to go through in just a few weeks.
F. System Resources

1. What are the system’s primary hardware components?
   The Permitting system is comprised of the following hardware components:
   
   a. The permitting system software and database is supported by a complex of Virtual Machines operating on an ESX 5.1 platform. There is a VM environment for the: online system, test system, staging system and production software system. Each VM is 2 CPUs and operates Linux Ubuntu 12.04 operating system.
   
   b. The mobile app operates on the Apple iPad and iOS operating system.

2. What are the system’s primary software components?
   The Permitting System is a custom developed system. The County’s Planning and Land Services Department and Information Technology Department teamed together to plan, design, engineer, build and deploy the system. The primary components are:
   
   a. Application and User Interface: The application is written in ColdFusion and JavaScript with an EXTJS GUI.
   
   b. Database: The database for the permit database is Sybase, the database for general mapping is SQL Server/ESRI SDE database and the database for the mobile mapping is PostGres.
c. GIS: The spatial processing for the critical area analysis of the permit process is ESRI ArcServer and web services written in Java.

d. Mobile App: is written with HTML5, JavaScript, Sencha Touch (for cross device support), Open Layers (mapping window).

e. Live Chat: There are links to Live Chat on both online permits and the PALS departmental website.

3. What data does the system work with? List and briefly describe the database(s).

The Permitting System allows users to create, edit, and view information about their permit. The database contains parcel information, the type of permit, descriptive information about the permit, electronic documents for the permit, inspection schedules for the permit and all other pertinent information for permitting and inspections. The attribute information is stored in a Sybase database and the mapping information is stored in a SQL Server/ESRI SDE database and PostGres spatial database.

4. What staff resources were required to implement the system?

The improvements in the Permitting System that are worthy of the ESIG award were started in 2012 and the three-year project required the following resources:

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<th>Resource</th>
<th>Time</th>
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5. Comment on anything unusual used to develop your system.
The dedicated team who built the system used a collaborative, agile software development process. The business analyst and test analyst sat in the same work area as the developers. The team worked in 2 weeks sprints and planned and designed the system together. The just in time software testing allowed the team to test as each component was developed. This greatly reduced rework or redesign that would have delayed the project and increase costs.

Most notably, the team included the Planning and Land Services Director, Dennis Hanberg. He had recently joined the County and had a vision for how the Department could become the Best Permitting Agency in the State. With resources at an all time low, Mr. Hanberg focused on improving core software systems and dramatically increasing the self-service aspects of the public web site. His goal was total transparency of the inspection process which included being about to schedule inspections online, view inspection reports and view pending actions. The system interface was streamlined to be more user-friendly and functional. More data is now presented to the user and adding scanned documents and historical permit files allows the user to have a complete permit history online.
Dear Exemplary Systems in Government Award Committee,

Thank you for the opportunity to present our Next Generation Permitting System and brag about all we have accomplished with this great project. Here are some of the many successes of this great program:

- Customer access to self-service tools, property information and permit records through an updated Permitting Portal
- Ability for customers to electronically submit and pay for permits
- Inspector access to project files and records from their iPads, which reduces extra photocopies or transporting paper files to the field
- Ability to enter inspection comments directly to the permanent record, reducing the number of daily printed forms left at each project site
- Access to an inspector task list that eliminates additional paperwork and helps with rescheduling and balancing workloads
- Ability to email comments directly to the applicant - faster responses and less paper
- Ability to take a photo and save it directly to the permanent record - eliminates the need for digital cameras and printing of photos to be saved in file
- Integrated GIS/GPS access so inspectors can easily map routes and check on nearby projects
- Ability to conduct certain inspections remotely using free software such as Skype and Facetime

As a result of these improvements, many customers are using the self-service tools and starting the permitting process online. We have also seen an increase in the number of inspections we can do each day and much happier customers. They get notified that an inspection has occurred through our E-notify functions, and are able to respond to requests for changes or additional information much faster. This means customers can spend less down time waiting for inspections and more time working while keeping an eye out for electronic updates.

This team has done a fantastic job creating online tools and the Field Inspection app, as well as training a staff with little prior access to iPADS and touch screens. Hats off to the team for creating a system that has saved valuable sustainable resources, time, and money.

Dennis Hanberg
Director Planning and Land Services
253-798-2754
RE: Changes to online and electronic tools for Planning and Land Services

Mr. Hanberg,

The Master Builders Association of Pierce County (hereafter “MBA”) is pleased to express support of the changes which have taken place at the Pierce County Planning and Land Services (PALS) in regards to the online and electronic tools which are now available for your customers.

The MBA is grateful for the leadership that PALS has demonstrated in looking to utilize technology to save time for your customers. The menu of tools that you have made available for individuals which includes Skype inspections, the ability to go online for submittals, ability to get e-notifications on projects, do electronic field inspections and more has really demonstrated your dedication to the needs of our members in terms of saving time and money and cutting down on unnecessary and antiquated processes.

We are appreciative of your efforts in listening to MBA Members concerns, making changes accordingly and looking to create better efficiencies.

The MBA fully supports PALS in the use of the electronic and online tools that are available through your department.

Sincerely,

Jeremiah J. Lafranca
Government Affairs Director, MBA of Pierce County
Testimony for Field Module

Brett – Residential Superintendent

“I appreciate having inspection results that can be printed and passed out to multiple contractors. ”

“The inspection notes are always legible!”

“Instant certificate of occupancy helps speed my closings and lets homeowners move in faster.”

Tony - Residential Superintendent

“It helps me meet my build schedule and speeds re-inspection times.”

“I love the email notification system, I know exactly when inspections have been completed.”

Darryl - Commercial Superintendent

"I don't have to save all the paper inspection copies anymore, I have them organized and accessible online without having another binder full of paper; having that app has been great."

PALS Building Inspector – Don Hill

“Since its implementation, the field inspection module has provided a higher level of customer service and an increase in inspector productivity. The module allows for quick and efficient routing of daily inspection workload by providing a map of all scheduled inspections in any given area. The module’s mapping capability allows inspectors to give customers more accurate inspection time estimates and decreases the amount of time spent researching site directions. Once at the inspection site, inspectors can instantly enter and record inspection results. This eliminates the need to write field notes and then re-enter results in the office computer at the end of the work day. Instant results reduce the lag time between re-inspections and helps speed construction.

Anyone with an internet connection now has real time access to inspection results from anywhere, aiding in project coordination. The module allows inspectors to assist customers with inspection scheduling and answer questions with full project notes and history. The field inspection module has redefined the service and efficiency of Pierce County inspectors and placed us at the forefront of in-field technology.”
PALS DENG Inspector – Roger Jernegan

The convenience for me has been:

1) Communicating in real-time with review engineer’s and project engineers about construction issues/problems when immediate solutions are needed.

2) Pictures can be taken in the field providing a visual that can be immediately sent out for visual reference to project engineers, review engineers, contractors, and other agencies such as SWM and PW’s.

3) I’ve been able to receive change orders/revisions in the field which help complete some inspections where previously I’ve had to wait until I return to the office to retrieve the change orders/revisions and then complete an associated inspections later.

4) On occasion when sent out to a site for an unscheduled inspection I’ve been able to bring plans and references up in the field for the task.

5) With the ability to keep several references on the module I’ve been able to share information with contractors and engineers in the field more quickly.

6) I’ve been able to respond much more quickly to field work related queries via e-mail instead of waiting till late in the afternoon or until the next morning.

7) Quicker turnaround on some inspection inputs when necessary.

In summary, there are fewer delays in inspections and reviews which improves productivity for both inspectors and contractors.
Testimony for Skype Technology

Customer – Johnny Spevak

I was able to use Skype for a mechanical inspection and it was awesome. I didn’t have to wait around for an inspector to arrive at my home, I was able to schedule the inspection for a specific time. The process was very simple, the inspector guided me through it with ease and we were able to get approved within about 15 or 20 minutes. I will definitely use this again for future inspections.

PALS Applicant – Andrew Van Gordon

I appreciate being able to use Skype throughout the interview process. I was able to speak and interact with the interview committee at a higher level than I would have been able to if I was being interviewed over the phone. Skype also saved me time and money as I did not have to buy a plane ticket, pay for a hotel or set aside several days to fly from Maryland for an in-person interview. As someone who was not living in the general area during the interview process I feel that Skype provided me with a superior interview experience.

PALS Inspector – Mike Lee

Skype is great because customers don’t have to wait up to two days to get a re-inspection done, for something that may only take them an hour or two to fix. They can just Skype me wherever I happen to be and I can complete the inspection right then and they can move on with other things with minimal time loss. It is a win-win for both parties, the customer saves time and the county saves man-hours, drive time and gas.