

IT Plan – Agency Operations

Agency: Public Service Commission

Responsible Party:

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Technology Description:

The Public Service Commission is a constitutional agency comprised of three Commissioners who are elected on a statewide basis to six-year, staggered terms. The Commission is legislatively authorized a staff of 44 full-time employees.

The Commission fulfills its constitutional and statutory mandates by protecting the public interest and regulating utilities, mining companies, and licensees in a fair, efficient, responsive, and cooperative manner. Regulatory initiatives assure that:

- Utility customers receive reliable and safe service at reasonable rates from financially sound companies.
- Mined coal lands are reclaimed to provide a safe and productive environment now and in the future.
- License and permit holders and operators of commercial weighing and measuring devices operate in a safe and fair manner.
- The Commission has seven divisions, each of which has distinct areas of responsibility. These divisions and responsibilities are:
 1. Public Utilities Division - Regulate telecommunications, natural gas and electric utilities, and oversee siting applications for energy generation and transmission facilities.
 2. Testing & Safety Division - Monitor the accuracy of commercial weighing and measuring devices that are used throughout the state and monitor the operations of energy distribution pipelines to promote public safety.
 3. Licensing Division - License and regulate public grain warehouses, facility-based grain buyers, roving grain buyers and hay buyers, auctioneers and auction clerks, railroads to the extent provided for by state law and represent North Dakota's rail shipping interests in federal proceedings and in direct negotiations with rail carriers.
 4. Reclamation Division - Issue permits to companies that are proposing to conduct coal mining activities in the state and monitor subsequent mining activities to ensure compliance with North Dakota's reclamation laws.
 5. Abandoned Mine Lands Division - Use available federal funds to identify and prioritize hazards associated with pre-reclamation law mine sites in North Dakota, develop construction designs to minimize or eliminate the greatest hazards, and hire contractors to undertake related work.

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6. Legal Division - Provide the Commission and its various divisions with legal counsel, assist the Commission in the adjudication of cases filed with the Commission and represent the Commission in other jurisdictional cases that are subsequently appealed to the courts.
7. Administrative Division – Administer the agencies day-to-day activities including budgeting, accounting, human resources and agency administration, grant administration and procurement.

Asset Management Plan

The Public Service Commission (PSC) maintains an IT infrastructure supporting PSC business processes including geographic information systems (GIS). The infrastructure includes necessary technology to serve desktop, server, storage, and back-office needs for PSC business functions. In addition to standard office automation peripherals such as printers and photo-copiers, the PSC also maintains large format plotters and printers and large and small format scanners to address business requirements for the Commission's extensive legislative mandates in areas such as utility regulation, siting of energy related facilities, coal mining, licensing of auctioneers and grain elevators, and monitoring weighing and measuring devices.

The support of PSC business functions requires systems supporting a wide variety of highly specialized technical professionals, including engineers, geographic information specialists, utility analysts, soil and plant scientists and geo-hydrologists. Support of the wide variety of specialists requires a substantial and varied technological infrastructure. Due to the required business processes and the PSC's business partners, the infrastructure and tool set provided must be current and in step with our business partners. The PSC has three FTE's supporting this infrastructure and specialists utilizing the tools provided. Two of the FTE's are programmer/analysts, one supporting non-GIS application development and maintenance, and the other supporting the GIS and related applications. The Technology Director provides guidance and supervision as well as support for servers, storage and back-office systems.

Desktops/Laptops

The PSC provides windows desktops. The operating systems are primarily Windows 7 in 64 bit versions, but we do support Windows 7 32 bit versions. The 64 bit versions are used to support the high-end scientific or engineering applications, and the 32 bit version for the specialized systems. The replacement schedule for desktops varies from two to four years depending upon user application. The high-end systems supporting GIS, engineering and scientific systems are replaced on the shortest allowable schedule and are often later used as standard desktops for less intensive users. The PSC also maintains a number of specialized workstations for specific applications or processes. These workstations primarily utilize Windows 7, however Linux is also utilized. The replacement of these workstations is approximately three years on average. The PSC maintains laptops and tablets equipped with GPS for users frequently out of the office or those needing specialized field applications and systems, for example engineers or scientists working in the field. Monitors are replaced as failures occur or after six years. The estimated monitor replacement is approximately 33% per biennium.

Scanners

The PSC maintains two types of scanners. The first provides standard sized document scanning to support common business processes such as case management or licensing. The other is a large format scanner capable of scanning maps and other information up to 42" wide. The scanners are on a four year replacement schedule with the exception of the wide format scanner which has a replacement schedule of six years.

Printers/Plotters

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Printing technology has evolved significantly over the past decade, and the PSC has consolidated the majority of the agency print services around two high-speed digital photocopiers. The agency still maintains two color printers/copiers. In addition, there is still one workgroup printer that is available in one key area for purposes of addressing specific print functions that are not addressed by the digital photocopiers.

In addition to the general-purpose business printing requirements, the PSC will continue to require large format printing capabilities. These are currently being met with a large format HP DesignJet plotter. The replacement cycle will be dictated by the life-cycle of the plotter which is governed by usage. Based upon current usage, it would be reasonable to assume that the replacement cycle will continue to range from 4 to 6 years.

Server

The PSC maintains most of the server infrastructure to support the agency data management and application requirements. Currently, the PSC maintains file and print servers for both standard business functions and high demand GIS, engineering and scientific processes. The PSC also maintains a database server, and GIS server. Mail, standard application services, and WEB services are provided by ITD.

Unlike the desktops, monitors, and other peripherals, server replacement cycles are more often dictated by application requirements and software resource requirements than by equipment life-cycles. It is not uncommon to upgrade or implement software changes that will vastly change the load and demand placed upon the server. Because server performance and reliability impact the productivity of all PSC employees, replacement cycles are matched to the functions that the server provides. The GIS servers currently require greater performance with greater RAM requirements. These servers are generally replaced more frequently with an average replacement cycle of approximately every 2-3 years. Typically, the displaced servers are then re-conditioned and used as file servers. As a result the replacement cycle on average for all of the servers is between 3 and 4 years.

Storage

The PSC maintains a large storage infrastructure in addition to the storage that is attached to each desktop, laptop, and server. The PSC was required to address server storage requirements to address both the digital capture of historic and current scientific data resources and on-going GIS initiatives. Internal server storage and direct attached storage did not provide the long-term expansion capabilities or effective management options for the growing storage requirements of the agency.

Large storage is managed independently of the server infrastructure, and as such, a replacement strategy has been developed that requires replacement of the existing disk and related subsystems every 6 years. Given the constant increases in density of storage, the replacement strategy is expected to often be provided by necessary expansion of storage capacity needed to support the PSC business processes.

Software

The PSC maintains a policy to keep all software current. This policy is complicated by the need to maintain synchronous software deployment with the PSC's business partners and federal oversight agency for the mine related programs, especially the Office of Surface Mining (OSM). Much of the software utilized by the PSC's federal programs is provided by OSM. PSC experience indicates routine incremental upgrades are far less traumatic to business functions than larger periodic wholesale updates. Development platforms, databases, and other supporting systems are maintained at current stable release levels. Application development staff migrates and maintains applications in current development platforms and release levels. When a change in development platforms is prudent, applications will be migrated proactively to new technologies.

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The mix of software tools that are used within the agency include an array of different schedules and software maintenance issues. For many of the larger applications and software suites, the agency is enrolled in annual maintenance agreements to maintain the current state of the software. The following is a list of core software, including maintenance method and business processes:

- Sybase Database System
 - PSC has maintained Sybase since its adoption in 1993.
 - Supports all business applications except GIS, scientific or engineering based applications.
 - Supports applications developed by the PSC and ITD including PowerBuilder, java and .NET development platforms.
 - Maintained through maintenance contracts at current stable versions.
- AutoCAD
 - Supports GIS, and engineering business processes.
 - Maintained through maintenance contracts at current stable versions.
- ESRI GIS
 - Initial systems are in production with continuing development in support of business processes throughout the agency.
 - Primary application in analysis of mining permits, siting applications, and abandoned mine reclamation projects.
 - Licensing provided by PSC and OSM.
 - Maintained in sync with business partners and federal oversight agency (OSM).
 - Maintained through maintenance contract.
- Java
 - Developing Java applications in support of GIS.
 - Primary application in analysis of mining permits, siting applications, and abandoned mine reclamation projects.
 - Maintained at current stable release levels.
 - Maintained through open source resources.
- PowerBuilder
 - Utilized since 1993.
 - Supports all business applications including non-geographic portions of GIS, scientific or engineering based applications.
 - Primary application in case management, licensing, testing and safety, mining permit administration and general agency administration.
 - Maintained through maintenance contract.
- Microsoft Suite
 - Supports all business applications.
 - Maintained through maintenance contract.
- Exam Hand Uni
 - Supports grain warehouse and grain buyer inspections.
 - Maintained through maintenance contract.
- Various other technical or scientific process applications
 - Maintained as needed dependent upon application and business requirements.

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Planned activities:

Technology Direction 1: Use of high-end, specialized scientific and engineering software (including AutoCAD and GIS) provided by the federal Office of Surface Mining (OSM) and expanding the use of remote sensing and image analysis.

- Objective(s)
 - Coordinate with engineers and scientists from the PSC, OSM and industry.
 - Expand the use of mobile computing with the use of GPS equipped tablet PCs and use of GIS based maps and data.
 - Maintain and enhance acceptable and effective tools.
 - Meet legal and technical requirements of state and federal statutes and rules.
 - Meet software licensing requirements.
 - Plan maintenance and installation around schedules of high cost professionals.
 - Maximize quality.
- Supports
 - Reclamation and Abandoned Mine Lands Divisions' management applications.
 - Reclamation and Abandoned Mine Lands Divisions' technical analysis of data used for day to day business processes.

Technology Direction 2: Integrate Geographic Information Systems (GIS) with legacy databases and other electronic information supporting the agency business units. This has started with the Reclamation and Abandoned Mine Lands (AML) Divisions.

- Objective(s)
 - Coordinate with engineers, scientists, and administrators from the divisions.
 - Identify electronic information associated with mine areas.
 - In coordination with technical staff develop business processes supported by an integrated GIS system. This system will increase speed, accuracy and effectiveness of mine permitting, inspection and enforcement. GIS also assists with the prioritization and the design of AML reclamation projects.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - Reclamation and Abandoned Mine Lands Divisions' management applications.
 - Reclamation and Abandoned Mine Lands Divisions' technical analysis of mine related business processes.
 - Beginning support of Public Utilities with future support of Licensing and Testing and Safety Divisions.
 - Analyzing feasibility of supporting Public Utilities siting applications.

Technology Direction 3: Economical management and storage of increasingly large graphics files.

- Objective(s)
 - Storage is allocated in discussion and agreement with end users on the basis of volatility, archive requirements, speed, and reliability.
 - Ensure least cost and best match solutions.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.

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- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 4: Conversion of all PSC documents and data to digital format to ease physical storage and retrieval, make data more usable and support automated workflow.

- Objective(s)
 - Work with administrative personnel, engineers, scientists from PSC, OSM, industry, and ITD to find a solution which will accommodate all necessary information, integrate into federal, state, and industry systems and allow data from each to seamlessly integrate into the whole.
 - Integrate the existing case management system and databases into the workflow system.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - All agency personnel, business processes and divisions

Technology Direction 5: End-user team development of integrated agency-wide database and workflow system.

- Objective(s)
 - Provide IT support and interaction with ongoing agency systems management project team composed of non-IT end-users and administrators to re-design how the PSC does business in the 21st century (This is an agency business analysis project).
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 6: Weights and Measures Division field usage of IT technology.

- Objective(s)
 - Monitor and refine current field usage processes with inspectors.
 - Maintain a workable, automated process in collaboration with inspectors.
 - Identify systems, hardware and software that integrate with current systems, industry standards, and are field deployable.
 - When economically feasible and technically practical, utilize ITD licensing, systems, and expertise.
- Supports
 - Testing and Safety Division, business processes and applications.

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Technology Direction 7: Continue development of electronic permitting. Electronic permitting for surface coal mining permits was conceived in 1996, implemented in 1999 and is continually evolving. It requires fast interaction between PSC, OSM and industry users who designed the system. PSC needs to match industries ability to test, buy, and use cheap, effective hardware and software solutions with end-user decision-making flexibility.

- Objective(s)
 - Work with administrative personnel, engineers and scientists from the PSC, OSM and industry who design and enhance the process. The PSC will continue to enhance solutions which will accommodate all necessary information, integrate into federal, state, and industry systems and allow data from each to seamlessly integrate into the whole.
 - Meet all state and federal requirements for proper submission of a permit.
 - Rapid procurement of hardware and software for compatibility with e-permit usage and format.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - Reclamation Division's management applications.
 - Reclamation Division's technical analysis of mine related data business processes.
 - Model for developing electronic permitting processes for other agency divisions.

Technology Direction 8: Continue to support specialized technical software.

- Objective(s)
 - Day to day interactions with PSC administrative personnel, engineers and scientists, OSM and industry who utilize the applications.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 9: Ongoing maintenance and enhancement of web-based e-transfer of hydrologic data between industry and PSC.

- Objective(s)
 - Meet regularly with engineers and scientists from PSC, OSM, industry and other state agencies to find the most appropriate solution.
 - Leverage current PSC, Water Commission, and ITD infrastructure to create a fully functional, minimal cost, state, federal, and industry integrated hydrologic submission system.
 - Utilize existing Water Commission's web interface for public, industry, and governmental study.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - Reclamation Division's management applications.
 - Reclamation Division's technical analysis business processes and fast retrieval of hydrologic data.

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Technology Direction 10: Development of mine permitting data management system based on always-up-to-date queries/reports of databases shared by industry and the PSC (future project envisioned as evolving from e-transfer of data to PSC over the next five years).

- Objective(s)
 - Meet regularly with engineers and scientists from PSC, OSM, Industry task force, and other government agencies to find the most appropriate solution.
 - Leverage current PSC, other state agencies, and ITD infrastructure to create a fully functional, minimal cost, state, federal, and industry integrated data management system.
 - Meet all state and federal requirements for legal submission of a permit.
 - Rapid procurement of hardware and software for compatibility with e-permit usage and format.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - Reclamation Division's management applications.
 - Reclamation Division's technical analysis.

Technology Direction 11: Timely communication with business partners.

- Objective(s)
 - Work with administrative personnel, engineers and scientists from PSC, OSM, industry, other government agencies and ITD to find a solution that will accommodate all necessary information.
 - Integrate into federal, state and industry systems and allow data from each to seamlessly integrate into the whole.
 - Meet all state and federal requirements for legal submission of reports, data, maps, and plans needed for permits.
 - Allow appropriate size documents and data to be transferred electronically.
 - Determine needed storage size and necessary retention in mail system.
 - When economically feasible and technically practical, utilize ITD standard products.
 - When practical, leverage ITD's licensing, systems, and expertise.
- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 12: Facilitate in-house software training by OSM.

- Objective(s)
 - Identify necessary hardware and software for training.
 - Utilize software versions and methods agreed upon by OSM, industry, and the PSC.
 - Rapid acquisition of hardware, software, and licensing for compatibility with the PSC and OSM licensing.
 - Set up temporary classroom facilities with hardware and software specific to mining with course work integrating state and federal resources as appropriate.
- Supports
 - Reclamation and Abandoned Mine Lands Divisions' management applications.
 - Reclamation and Abandoned Mine Lands Divisions' technical analysis business processes

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Technology Direction 13: The agency will have well-documented procedures for the programs it develops.

- Objective(s)
 - Maintain and enhance well-documented procedures and programs that are consistently applied.
 - Regularly review and update procedures.
 - Provide necessary documentation on deployed applications.
- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 14: Prepare IT Plan.

- Objective(s)
 - To meet legislative mandate.
- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 15: The agency will maintain data that are accurate, consistent and easily accessible to the public.

- Objective(s)
 - Provide easy public access through a web-based search and retrieval system for appropriate docket information.
 - Work with PSC divisions, and industries to find a web-based solution which will accommodate all on-line self-docketing.
 - Continue to advocate internet connectivity as a technical tool and promote electronic sharing of information.
 - Continue development of Commission's website. Site must have current, accurate and useful information for the public and regulated industries.
 - Create infrastructure necessary to allow better public access to Commission information.
 - Define, execute, and regularly test disaster recovery plan for all systems.
 - Continue to accept electronic coal mine permit applications, and work with industry and the public to accept more applications electronically.
 - Implement all changes and new systems with E-government support as a critical element.
 - Conversion of paper documents to support efficient use and accessibility.
- Supports
 - All agency personnel, business processes and divisions.

Technology Direction 16: The agency will use the electronic records as the legal document.

- Objective(s)
 - Review and revise Commission administrative rules regarding electronic records following ITD's rules and guidelines.
 - Review and update mechanisms and administrative rules for electronic submission of legal documents.
- Supports
 - All agency personnel, business processes and divisions.

Planned changes /updates to technology:

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Technologies being watched or investigated:

Maintain and improve system security through effective use of proactive systems maintenance, malware protection, intrusion detection, and employee training.

The PSC has deployed and is continuing to evaluate the usefulness and efficiency of using tablets primarily iPad's for review of case documents. The equipment currently under consideration includes the Apple iPad and other Android Tablets. The PSC currently is utilizing the iPad to allow easy transport and reading of large case documents. This is especially useful when all documents pertaining to a particular case need to be easily accessible and reviewed while travelling. The focus of the evaluation is on the ability to easily and accurately transfer the large documents associated with siting cases to the iPad while maintaining proper search and indexing capability. These documents would normally be contained in many large three-ring binders.

iPad's have been deployed for Reclamation and AML usage. Custom map data can be imported onto the iPad specific to the inspection site, along with caching of maps so they are available when offline. Track logs can be generated, features and notes can be collected, and photos can be taken along with location data. The functionality is what is needed. The evaluation process will determine the ease with which data can be imported to and exported from the iPad, and the success of their general use in an outdoor environment. While not applicable to all field work they are significantly more cost effective for less robust applications.