

**Legislative Digital Policy Advisory Committee – Recreated
(LDPAC 2)**

**Year One Report
to the
Joint Budget Committee
and the
Committee on Legal Services**

Members of the LDPAC 2

Dan Cordova, Chair	Colorado Supreme Court Librarian
Gene Hainer, Vice-Chair	Colorado State Librarian
Dan Cartin	Director, Office of Legislative Legal Services
DJ Davis, Deanna Maiolo	Designees, Secretary of State
Jennifer Gilroy	Revisor of Statutes
Korwynn Kolar	Designee, Chief Clerk of the House of Representatives
Susan Liddle	Designee, Legislative Council
Max Majors	Designee, Secretary of the Senate
George Orłowski	State Archivist
Keith Schrum	Designee, History Colorado

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INTRODUCTION

LDPAC

In accordance with the General Assembly's charge in HB 13-1182, Session Law Ch. 257, § 24-80-114, C.R.S., the Colorado Legislative Digital Policy Advisory Committee (LDPAC) submitted its final report on November 1, 2013. In that report, the LDPAC primarily made recommendations regarding the appropriate future treatment of decaying historical audio files deposited with the State Archives by the Legislative Council. Secondly, the LDPAC initiated its study of the various state jurisdictions that have adopted the Uniform Legal Material Act (UELMA). Colorado's version can be found at HB 12-1209, Session Law Ch. 138, §24-71.5-101 et. seq., C.R.S.

Since the final LDPAC report, Archives has made significant progress, as outlined below.

On March 31, 2014, in accordance with legislative mandate, the Colorado Secretary of State's Office came into compliance with UELMA by applying digital signatures to administrative rules and regulations in archival PDF format.

LDPAC 2

The Legislative Digital Policy Advisory Committee was re-created (LDPAC 2) by the General assembly in HB 14-1194, Session Law Ch. 203, § 24-80-114, C.R.S. Three additional members were added, and the committee was charged with the following duties:

- 1. Monitor the digitization of archived recordings;**
- 2. Make recommendations for the implementation of the "Uniform Electronic Legal Material Act" for legislative electronic records; and**
- 3. Make recommendations for an optimal method of records creation, storage, and access for other state electronic records.**

Section 24-80-114, C.R.S. will repeal on July 1, 2016, subsequent to a requirement that the LDPAC 2 submit two benchmark reports.

In this year-one report, the re-created committee presents the following findings and recommendations:

RECOMMENDATIONS FOR UELMA IMPLEMENTATION

Background. In 2011, the National Conference of Commissioners on Uniform State Laws, recognizing that information published on line is susceptible to being altered either accidentally or maliciously at each point that it is stored, transferred, or accessed, proposed a uniform act requiring certain standards be met by a government publisher of electronic legal materials before the government agency could designate the material as an "official" version. The act, called the

"Uniform Electronic Legal Material Act" (UELMA), was immediately embraced by the Colorado General Assembly which adopted its version of UELMA in 2012.¹ As drafted by the uniform law commissioners and as adopted by the Colorado General Assembly, UELMA requires the following three conditions be met before an official government publisher of legal material in an electronic format may designate the material as official:

- 1) The official publisher must *authenticate* the legal material in the electronic record;
 - 2) The official publisher must provide for the *preservation* and security of the record;
- and
- 3) The official publisher must ensure that the material is reasonably available for use by the public on a *permanent* basis.

For purposes of Colorado's UELMA law, the Colorado Secretary of State is the "official publisher" of the Code of Colorado Regulations (CCR) and the General Assembly is the "official publisher" of the state constitution, the Colorado Session Laws, and the Colorado Revised Statutes. Because the CCR is only published on line, the terms of UELMA require that the Secretary of State designate that format as the "official" version and meet the requirements of UELMA.² So long as the General Assembly continues to publish its legal materials in a *printed* format as well as electronic, it does not have to designate the electronic format as official and meet the UELMA requirements. However, before the General Assembly may designate an electronic version of any of its legal material publications as official, the three prerequisites must first be met.

Authentication. An "authentic" record is one whose content has been verified by the government publisher to be complete and unaltered when compared to the version originally published. Authentication is simply an electronic method of providing assurances to the end user that the integrity of the legal material has not been altered or otherwise compromised since the initial publication. UELMA is "technology neutral" and leaves it to the adopting state to select the appropriate technology for authenticating its legal material from among a variety of available products. This neutrality also allows for technology changes, as needed, in the future. The committee reports that there are three recognized approaches to authenticating electronic legal material:

- 1) Secure hashing;
- 2) Digital signatures; and
- 3) Combined processes.

To meet the authentication requirement of UELMA, the Colorado Secretary of State invited requests for proposals, anticipating an expenditure of approximately \$150,000. However, the office received proposals exceeding \$800,000. As a result, the Secretary of State elected to undertake the authentication obligation in house. Over the course of approximately six months, that office converted its former paragraph-based HTML publications to archival PDF/A documents. The PDF/A file format is recognized by the International Organization for Standardization (ISO) and is designed to give a minimal feature set to enable long-term storage. The Secretary of State's office thereafter purchased a number of Entrust digital signature tokens to apply a custom stamp and thereby authenticate each PDF/A rules document.

¹ Part 71.5 of title 24, Colorado Revised Statutes.

² Section 24-71.5-104, Colorado Revised Statutes.

While the General Assembly initially appropriated \$198,912 to the Department of State for information technology services related to the implementation of UELMA, pursuant to HB 12-1209, Session Laws Ch. 138, Sec. 3; §24-21-104 (3) (b), C.R.S., the Department of State was able to limit its expenditures to authenticate the CCR by devising a workable system in house with an expenditure of approximately \$75,000, as more fully described in **Appendix A**.

The committee has also researched what technology other states are utilizing to meet the authentication component of UELMA. **Appendix B** lists the authentication methods currently employed by ten states and the United States Government Printing Office. Not all of the states on the list have adopted UELMA; however, all of the states listed authenticate some type of electronic legal material. Similarly, there are a small number of additional states that have passed UELMA, but have not committed to an authentication method.

Furthermore, the National Institute for Standards and Technology (NIST), establishes not only standards and guidelines for authentication, but also security protocols for electronic files. The three approaches for authenticating electronic material listed above are recognized by NIST as compliant (or capable of being made compliant):

http://csrc.nist.gov/groups/ST/toolkit/secure_hashing.html

http://csrc.nist.gov/groups/ST/toolkit/digital_signatures.html

Preservation. UELMA next requires that the official publisher of legal material in an electronic record that is or was designated as official provide for its preservation and security in either an electronic format or a format that is not electronic (print). This requirement is about preservation and storage and allows the publisher the flexibility to choose whether to preserve the electronic legal material in print or electronic format. The Colorado Secretary of State is in the process of addressing the preservation component of its compliance with UELMA to ensure the records' integrity and to provide for backup and disaster recovery of the records, if needed, and continuing usability of the material over time. Because that office only publishes its official legal materials in electronic format, it will likely preserve its records electronically as well.

The committee anticipates that the General Assembly will continue to produce an official print version of the legal materials it publishes and preserve that version for years to come. If it also elects to preserve the legal material in an electronic format (or chooses to publish only an electronic format of the legal materials in the future), the General Assembly will similarly need to securely store those electronic records to ensure their integrity, backup, disaster recovery, and sustained usability.

Permanency. Finally, the Act requires that the official publisher of legal material in an electronic format ensure that the material is reasonably available for use by the public on a permanent basis. Reasonably available access to the preserved electronic legal materials must ultimately be provided permanently and remain available in perpetuity.

Implementation of UELMA by the General Assembly. The General Assembly can use the information that this committee has collected from the Colorado Secretary of State's experience

and from other jurisdictions that are implementing UELMA or simply authenticating electronic government publications without adopting UELMA. The committee will continue to gather data for another year regarding the implementation of all three elements of UELMA, focusing on the five standards set out by the General Assembly in §24-71.5-109, C.R.S. As required by statute, on or before October 1, 2015, this committee will make specific recommendations related to the implementation of UELMA in Colorado.

However, before steps toward the implementation of UELMA may be undertaken by the General Assembly, it must first address critical preliminary matters. Similar to the experience of the Secretary of State, the General Assembly may choose to host the on-line version of the Colorado Revised Statutes and state constitution in house. Currently, LexisNexis hosts both on line pursuant to a five-year contract that will expire on December 31, 2017. Legislative staff for the General Assembly provides the on-line access to the Colorado Session Laws, although those legal materials do not currently meet the three criteria of UELMA.

This committee recommends that the General Assembly and legislative staff set a goal of bringing the on-line publication of the Colorado Revised Statutes, as well as the state and U.S. constitutions, in house in the next two to three years, but prior to the expiration of the LexisNexis contract. Doing so will enable legislative staff to quickly and nimbly adjust, update, and correct electronic records as needed. More importantly, an in-house designed and maintained resource would facilitate the long-term goals of this committee which ultimately seeks to connect all aspects of Colorado law electronically for the convenience and benefit of end users and allow for the possibility of statewide compliance with UELMA (in the hub-and-spokes approach acknowledged in the 2013 report of the LDPAC), potentially maximizing efficiency and reducing redundancy and expense. See **Appendix C**.

This committee envisions this full-service, cafeteria-style resource within reach and consistent with the recommendations of the uniform law commissioners who noted in their official comments to UELMA that, "[e]ach enacting state is encouraged to consider a single system for authentication of, preservation and security of, and public access to its legal material. A single system will lead to financial and personnel efficiencies in implementation and maintenance, and avoid confusion on the part of the users. While each enacting state will determine its own practices, states are encouraged to communicate, coordinate, and collaborate in the development of authentication, preservation, and permanent access standards." The Act itself provides that, to the extent practicable, the use of methods and technologies for the authentication of, preservation and security of, and public access to, legal material that are in harmony and compatible with the methods and technologies used by other official publishers in the state and in other states that have adopted this Act should be considered.³

Recommendation. In order to achieve this result, the committee recommends that the General Assembly appropriate sufficient funding to fund one full-time employee in the Legislative Information Systems (LIS) section of the Legislative Council Staff of the General Assembly to design a user-friendly electronic format of the legal materials identified in UELMA before the expiration of the LexisNexis contract in December of 2017, which may also include conversions in document mark-up language (the General Assembly currently uses SGML for publication

³ Section 24-71.5-109 (1) (e), Colorado Revised Statutes.

purposes) and word-processing applications (the General Assembly currently uses Word Perfect) in order to be compatible with authentication products recommended by this committee and potentially utilized by other government publishers in the state. Concurrently, this committee will continue to research information related to the implementation of UELMA and make recommendations regarding authentication technology as well as the preservation of electronic records in perpetuity that can be utilized by the General Assembly in the future.

The in-house publication by the General Assembly legislative staff would provide the flexibility to add additional resources to the repertoire of official electronic legal materials made available electronically in the future, such as citizen-initiated measures, legislative journals and calendars, reports of legislative committees, reports of Senate confirmations and, outside of the legislative branch, appellate court opinions, court rules, executive orders, attorney general formal opinions, and more.⁴

PROGRESS ON DIGITIZATION OF ARCHIVED RECORDINGS

1. Digitize taped archival recordings to optimum format:

- **Analog-to-digital conversion.** State Archives has identified and procured the hardware and software needed for simple multi-track transfer of analog tape materials, utilizing professional-grade AD/DA high definition translation units. Once the equipment is calibrated and fully functional, high speed multi-track processing can occur. When the system is fully functional, then the equipment for the stabilization of the earlier tapes will be ordered and put into use.
- **Create metadata using best practices.** State Archives have created a metadata template for audio recordings, using properties from the Dublin Core metadata⁵ set in Contentdm. Ten core metadata fields were identified as appropriate for recording of original dates and other descriptive information necessary to increase management and access to the digital collection. Special attention was given to field content standardization. State Archives' staff has begun converting archival wav files to mp3 files for ingest and access in Contentdm. As these files are ingested, metadata is created and embedded with the digital files.

2. Migrate digital recordings to the optimum format. While equipment is finalized for full multi-track extraction, State Archives has been working to both preserve and migrate all existing analog tape conversions accomplished through customer orders. This includes migration and preservation of original cassette and small-format tapes from 1973 that were

⁴ The on-line publication of executive orders are currently at:

<http://www.colorado.gov/cs/Satellite/GovHickenlooper/CBON/1251616203275>

The on-line publication of attorney general opinions are currently at:

http://www.coloradoattorneygeneral.gov/ag_opinions/index

⁵ **Dublin Core** is a small set of vocabulary terms that can be used to describe web resources (video, images, web pages, etc.), as well as physical resources such as books or CDs, and objects like artworks

not originally included in the LDPAC recommendations, but were deemed important as those materials do not exist on the larger multi-track formats. Additionally, approximately 1.5 TB of materials already separated into bill format and transferred for customers (1973-2011) are being migrated for preservation and those existing recordings converted to MP3 format for customer access. File naming and formatting are standardized so that all recordings - both original transfers and customer recordings, are archived using the optimum format designated by the Library of Congress, and in accordance with stipulated LDPAC specifications.

3. Provide the information technology system for ongoing archival storage and access.

Archives has purchased a license and is hosting services through Contentdm (OCLC), a digital collection management system designed to handle storage, management and delivery of our collections to users globally via the Web. The process of ingesting archived materials (legislative audio, digitized legislative bills, committee summaries) has begun. Overall, the State Archives is in the process of building a robust digital collection. The collection will not be immediately available for on-line public access; free on-line access to legislative history is the envisioned goal. The prototype for the existing collection, with select audio files from the 1974, 1975 and 1976 sessions, can be accessed through the following hyperlink to Contentdm (OCLC):

<http://cdm16924.contentdm.oclc.org/cdm/>

The digital collection metadata will also be uploaded to WorldCat, OCLC’s network of library content and services. Thousands of researchers will be able to find their way to our local collections not only through our webpage, but through WorldCat.org.

Archives are in the process of purchasing OCLC’s Digital Archive Service, a long-term storage solution for master files. It will store digital originals and master files in a secure, managed, purpose-built environment. In addition, it is designed to integrate within the workflow for building digital collections using Contentdm. Duplicates of the program’s electronic files housed in the Digital Archives are geographically distributed in separate, secure facilities; facilities and systems are protected from both minor outages and major disasters; each file is scanned and a unique “fixity key” is created which will let State Archives know if there has been a change to the file; and all files receive a scheduled virus check using industry standard software.

As of October 1, 2014, State Archives has expended the following toward the hardware and software required for the digitization of the legislative audio recordings (excluding personnel services and other ancillary costs):

Archive Digitization Project	Summary of Costs
Public Access hardware	\$6,603
Cloud Storage @ OIT	\$240
Future Cloud Storage (Contentdm - OCLC)	\$12,188

Content Mgmt Software (Contentdm - OCLC)	\$300
2 workstations for Public	\$2,500
2 Software Licenses for Workstations	\$2,000
4 External Hard Drives	\$500
3 Software Licenses	\$1,500
4 Audio Interfaces	\$6,400
Magnasync Playback	\$15,000
Dictaphone Playback	\$15,000
TOTAL	\$62,231

It is anticipated that in the next two fiscal years, State Archives will need the following hardware and software funding to continue this project:

Archive Digitization Project	Anticipated FY 15 Costs	Anticipated FY 16 Costs
Public Access hardware	\$1,900	\$1,900
Cloud Storage @ OIT	\$960	\$960
Future Cloud Storage (Contentdm - OCLC)	\$10,788	\$10,788
Content Mgmt Software (Contentdm - OCLC)	\$300	\$300
Additional Servers (Archives will work with OIT)	\$9,600	N/A
Annual Maintenance (new Tape Heads)	\$1,000	\$1,000
2 Prototype tape stabilization units	\$25,000	
Tape Stabilization @ \$100/tape (Archives will be doing in house)	\$20,000	\$20,000
TOTAL	\$69,548	\$39,948

This summary of work performed by State Archives during the past year is current as of October 1, 2014. To place it into larger context, historical legislative audio recordings are being stabilized for long-term preservation in order to retrieve them upon demand as a stand-alone set of data, in conjunction with the audio system currently maintained by Legislative Council, or as linked data in a future system. Future costs may increase or decrease, as technology changes as well as the needs of consumers.