PROVISIONAL OPEN DATA HANDBOOK

New York State
Office of Information
Technology Services

June 10, 2013

PROVISIONAL OPEN DATA HANDBOOK

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Open.ny.gov

New York State Open Data Initiative

"Our state government possesses vast treasure troves of valuable information and reports: from health, business and public safety data to information on parks, recreation, labor, and transportation … The Open New York web portal will allow researchers, citizens, business and the media direct access to high-value data, which will be continually added to and expanded, so these groups can use the data to innovate for the benefit of all New Yorkers." – Governor Cuomo, State of the State Address, January 9, 2013

I. INTRODUCTION

A. Open Data

Government is the public's business and the public should have access to the records of government. New technologies have dramatically changed both the way government conducts business and the public's expectations about access to government information. As part of this transformation, New York State launched Open.ny.gov, an open-government initiative, on March 11, 2013. Its goals are to spark innovation, promote research and economic opportunities, engage public participation in government, increase transparency, and inform decision-making.

Concurrent with the launch of Open.ny.gov, Governor Andrew Cuomo issued Executive Order No. 95, "Using Technology to Promote Transparency, Improve Government Performance and Enhance Citizen Engagement." This unprecedented Executive Order directed covered state entities, for the first time, to identify and catalogue their data, and make publishable state data available on the new transparency website.

The concept of "Open Data" describes data that is freely available, machine readable, and formatted according to uniform technical standards to facilitate visibility and re-use of published data. New York's open data platform is a web-based public data portal that catalogues data and enables data to be discoverable. The portal offers access to standardized data that can be accessed and re-used by citizens, business, researchers, journalists, developers, and government to process, trend, and innovate utilizing a singular dataset or combinations of datasets.

Open-NY puts tools for transparency, accountability, and innovation directly into the hands of New Yorkers and people all around the world through a centralized user-friendly interface. This increased visibility provides derivative value as the public is able to analyze and utilize government data, and better understand what is happening in government on all levels – federal, state, and local.

B. The Provisional Open Data Handbook

This provisional Open Data Handbook is intended as a general guide for government entities participating in OPEN -NY.[1] The Provisional Handbook provides guidelines for identifying, reviewing, and prioritizing publishable state data for publication. It is designed for use by both covered state entities and other government entities not covered by Executive Order 95 (including localities). Working in collaboration with state agencies, the Provisional Handbook will be supplemented, as needed, with technical and working documents addressing specific formatting, data preparation, and data refresh and data submission requirements.

Open.ny.gov is a dynamic, living platform – where the breadth of data and agency participation are continually being enhanced and expanded. This Provisional Handbook, providing guidelines for publication to Open.ny.gov, is the first step in a major shift in the way New York State government agencies share information to promote efficiency, accessibility and transparency; to engage citizens; and to foster innovation and discovery in the scientific and business communities. It begins the process of standardizing the state's data, which will make it easier for both government workers and the public to discover and use the data, as well as increasing "interoperability," so the data can more easily be shared and used by other technology systems. The state is issuing this preliminary handbook with the understanding that the uses and value of public data are constantly changing. We welcome input from academics, researchers, developers, businesses, entrepreneurs, and the general public to help identify data that would be useful to them and the best ways of providing it. The final Handbook will be released in November 2013.

II. GOVERNANCE/AUTHORITY

A. Executive Order No. 95

The goal of Executive Order No. 95, Using Technology to Promote Transparency, Improve Government Performance and Enhance Citizen Engagement, was to direct covered state entities to identify, prioritize and timely release all "Publishable State Data" to a single-stop online Open Data Website, established and maintained by ITS, for collection and public dissemination. The idea behind Open NY is to make Publishable State Data easier to find and use, so both agencies and the public save time and resources while getting the most value from the data.

1. Definitions:

Covered State entity: shall mean (i) any State agency or department, or any office, division, bureau, or board of such State agency or department, except where the head of such agency or department is not appointed by the Governor, (ii) any State board, committee, or commission, at least one of whose members is appointed by the

[1] For ease of use, the Handbook will refer to participating government "agencies," although that term encompasses other government organizational structures that may participate in OPEN-NY, such as government authorities.

Governor, and (iii) all public-benefit corporations, public authorities and commissions, for which the Governor appoints the Chair, the Chief Executive, or the majority of Board Members, except for the Port Authority of New York and New Jersey.

Chief Data Officer: shall mean the New York State Chief Data Officer in the Office of Information Technology Services or a designee thereof;

Data: shall mean final versions of statistical or factual information that (i) are in alphanumeric form reflected in a list, table, graph, chart or other non-narrative form, that can be digitally transmitted or processed; (ii) are regularly created or maintained by or on behalf of a covered State entity and are controlled by such entity; and (iii) record a measurement, transaction or determination related to the mission of the covered State entity. The term "data" shall not include image files, such as designs, drawings, photos or scanned copies of original documents; provided, however, that the term "data" shall include statistical or factual information about image files and geographic information system data.

Data set: shall mean a named collection of related records maintained on a storage device, with the collection containing data organized or formatted in a specific or prescribed way, often in tabular form.

ITS: shall mean the New York State Office of Information Technology Services.

Publishable State data: shall mean data that is collected by a covered State entity where the entity is permitted, required or able to make the data available to the public, consistent with any and all applicable laws, rules, regulations, ordinances, resolutions, policies or other restrictions, requirements or rights associated with the State data, including but not limited to contractual or other legal orders, restrictions or requirements. Data shall not be Publishable State data if making such data available on the Open Data Website would violate statute or regulation (e.g., disclosure that would constitute an unwarranted invasion of personal privacy), endanger the public health, safety or welfare, hinder the operation of government, including criminal and civil investigations, or impose an undue financial, operational or administrative burden on the covered State entity or State.

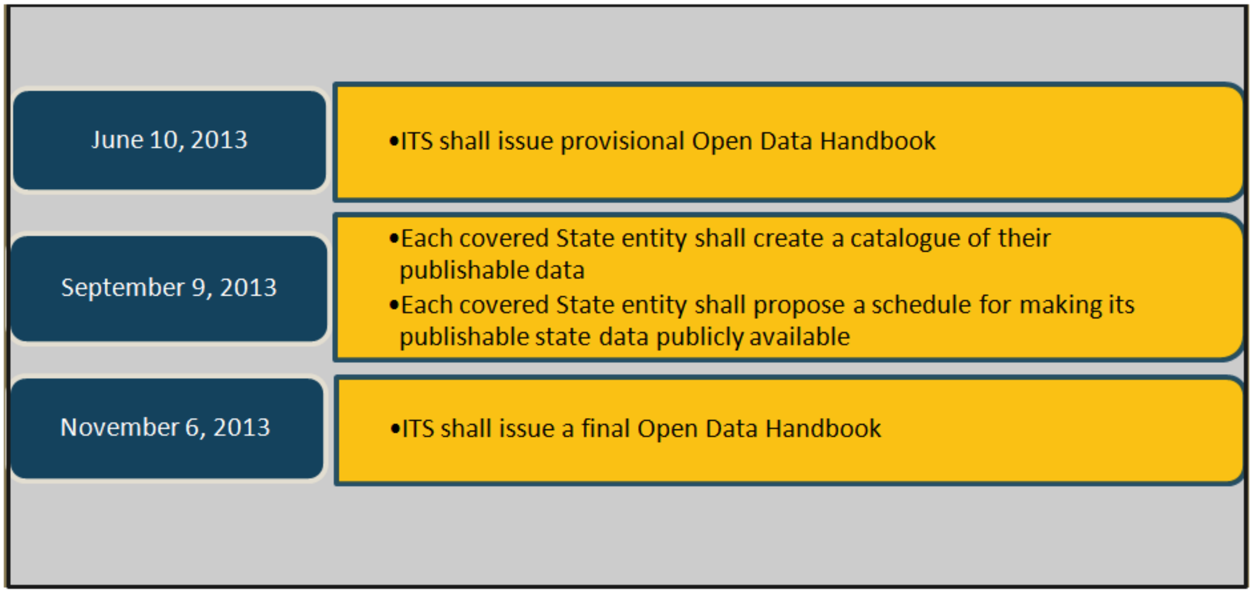
Executive Order No. 95 specifies the following:

2. Agencies Will Publish A Catalogue of Publishable Data:

Each covered State entity shall create a catalogue of their Publishable State data, and propose a schedule to ITS and the CDO for making its Publishable State data publicly available. Such schedules shall be made publicly available and provide for updating the data catalogue as appropriate.

Each covered State entity shall create schedules and prioritize data publication in accordance with guidelines set forth in the Open Data Handbook.

Executive Order Implementation Timeline Figure 1: Key Milestones



June 10, 2013	•ITS shall issue provisional Open Data Handbook
September 9, 2013	•Each covered State entity shall create a catalogue of their publishable data •Each covered State entity shall propose a schedule for making its publishable state data publicly available
November 6, 2013	•ITS shall issue a final Open Data Handbook

3. Open Data Website Administered by ITS

The Executive Order creates an Open Data Website for the collection and dissemination of Publishable State Data. The website will be administered by the New York State Office of Information Technology Services.

4. Each Covered State Entity Will Designate A Data Coordinator:

Each Data Coordinator: (i) has authority equivalent to that of a Deputy Commissioner or the head of a division or department within the covered State entity; (ii) has knowledge of data and resources in use by the entity; and (iii) is responsible for that covered State entity's compliance with the Executive Order.

5. ITS Will Form A Data Working Group ("DWG")

The DWG will assist the CDO in carrying out his or her duties under this Order. The DWG is made up of representatives from ITS and the Information Security division of ITS, the New York State Office of General Services, the Division of Budget, a local government expert from the Department of State and eight to twelve Data Coordinators, who represent an appropriate cross-section of covered State entities.

6. ITS Will Publish An Open Data Handbook:

ITS, in consultation with the DWG, is required to issue guidance in this Open Data Handbook to covered State entities about implementing the Executive Order. Within 90 days after the date of the Executive Order, ITS shall issue a provisional Open Data Handbook. Within 240 days, ITS shall issue a final Open Data Handbook.

7. Opportunity for Localities to Participate:

Localities are invited, and are encouraged, to submit data to the Open Data Website for publication in accordance with guidelines set forth in this Open Data Handbook.

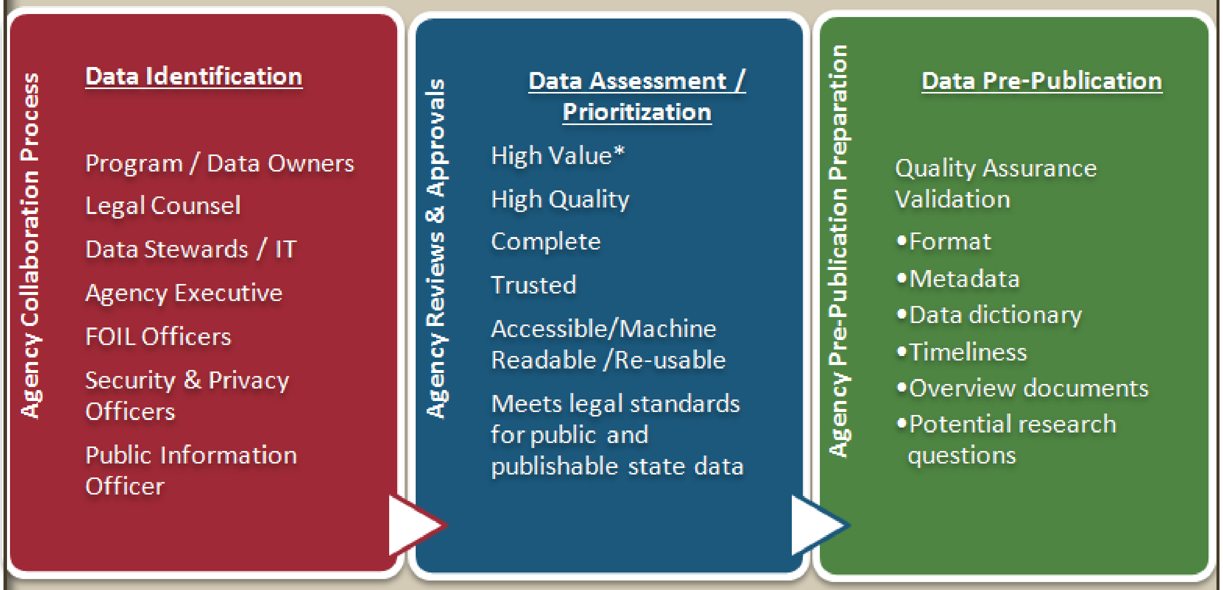
8. Participation by Other State Entities:

New York State agencies and authorities other than covered State entities shall be permitted, and are encouraged, to submit data to the Open Data Website for publication in accordance with guidelines set forth in the Open Data Handbook.

III. PUBLISHABLE STATE DATA

Executive Order No. 95 provides a specific definition of "Publishable State Data" to guide covered State agencies. Publishing data on OPEN-NY involves a collaborative multi-step agency process (see Figure 2 below). In identifying Publishable State Data, agencies should include analyses from their executive and program staff, data coordinators, FOIL officers, data stewards, public information officers, security and privacy officers, and legal counsel.

Figure 2: High Level Guidance Summary



Agency Collaboration Process

Data Identification

Program / Data Owners

Legal Counsel

Data Stewards / IT

Agency Executive

FOIL Officers

Security & Privacy Officers

Public Information Officer

Agency Reviews & Approvals

Data Assessment / Prioritization

High Value*

High Quality

Complete

Trusted

Accessible/Machine Readable /Re-usable

Meets legal standards for public and publishable state data

Agency Pre-Publication Preparation

Data Pre-Publication

Quality Assurance Validation

- Format
- Metadata
- Data dictionary
- Timeliness
- Overview documents
- Potential research questions

*High Value as defined within Executive Order 95 is data that can be used to increase the covered State entity's accountability and responsiveness, improve public knowledge of the entity and its operations, further the mission of the entity, create economic opportunity, or respond to a need or demand identified after public consultation.

Covered State entities (and entities not covered by Executive Order 95) vary widely in terms of size, personnel, functions, responsibilities, mission, and data collected and maintained. As such, the identification and prioritization processes may vary across agencies and entities. These guidelines serve to provide assistance across a broad spectrum of agencies, with the stipulation that agencies look to their governing laws, rules, regulations, and policies in identifying and publishing "publishable state data."

A. Dataset Identification

In creating a data catalogue, agencies should identify those datasets that are high value and are in accordance with the definition of "Publishable State Data" within Executive Order 95.

The questions in Figure 3 below are neither exhaustive nor may be applicable to all agencies, but serve to provide a framework to identify potential data for publication on Open.ny.gov. For each question, agencies should assess whether the data falls within the definition of "Publishable State Data."

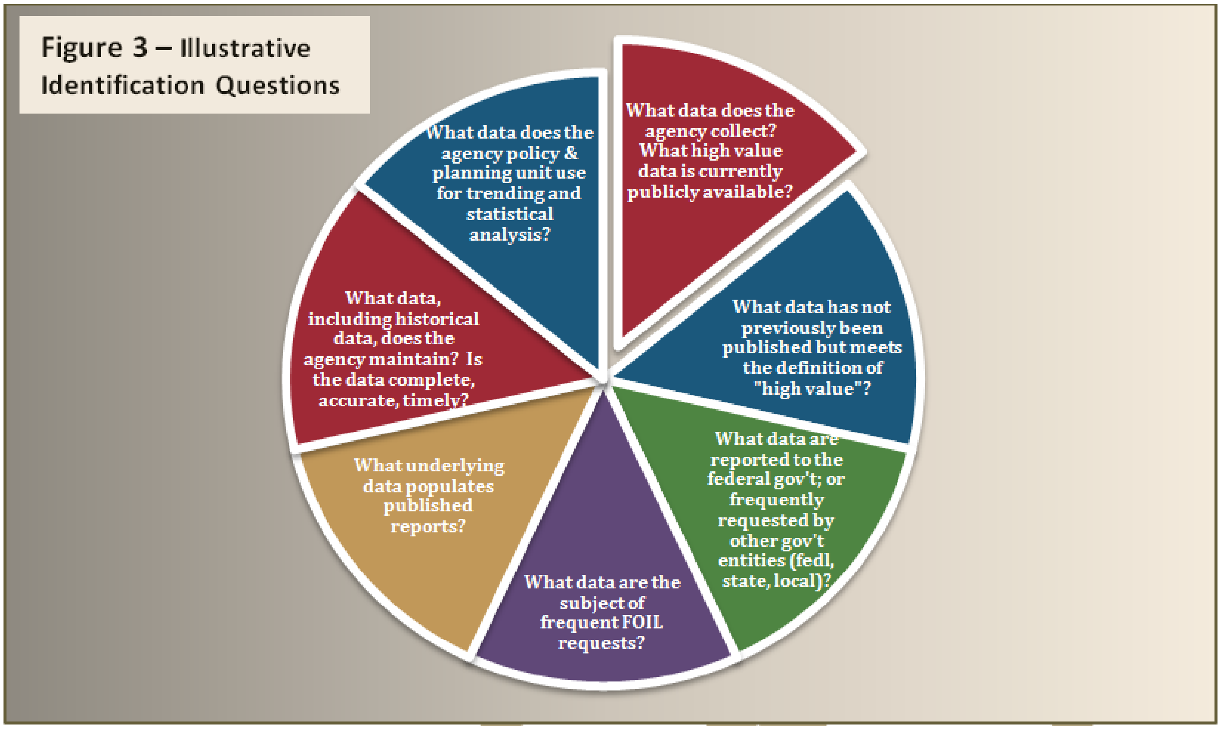


Figure 3 – Illustrative Identification Questions

What data does the agency collect? What high value data is currently publicly available?
What data has not previously been published but meets the definition of "high value"?
What data are reported to the federal gov't; or frequently requested by other gov't entities (fedl, state, local)?
What data are the subject of frequent FOIL requests?
What underlying data populates published reports?
What data, including historical data, does the agency maintain? Is the data complete, accurate, timely?
What data does the agency policy & planning unit use for trending and statistical analysis?

1. General questions:

- What data does the agency collect? What "high value" data are currently publicly available?
- What data are reported to the federal government; or frequently requested by other government entities (federal, state local)?
- What data does the agency policy and planning unit use for trending and statistical analysis?
- What data, including historical data, does the agency maintain?

- What underlying data populates aggregate information in published reports?
- What data is the subject of frequent or recent FOIL requests?
- What data have not been previously published but meet the definition of "high value" - publishable state data that can be used to increase the covered State entity's accountability and responsiveness, improve public knowledge of the entity and its operations, further the mission of the entity, create economic opportunity, or respond to a need or demand identified after public consultation.

2. Do the datasets represent discrete, usable information?

In identifying datasets, government entities may be concerned that users of OPEN-NY will not understand their raw data or, if distilled to its rawest form, might lose utility. For example, state and local rules might differ, such that publishing raw, separate datasets of the two may reduce the value of the raw data being combined into a single dataset.

There are no hard and fast rules about what level of detail is sufficiently granular to add value to a government dataset. Whenever possible, government entities should resist the temptation to limit datasets to only those the agency believes might be understood or useful. Entities should be wary of underestimating the users of OPEN-NY. OPEN-NY users may come from a variety of fields and specialties, including academic and other government users who can envision a use for the raw data not anticipated by the originating entity. A better practice is for the agency to ensure its metadata describing the dataset is complete, including comprehensive overview documents describing the data, data collection, data fields, and presentation of research questions to maximize the utility and usefulness of the data.

B. Prioritization

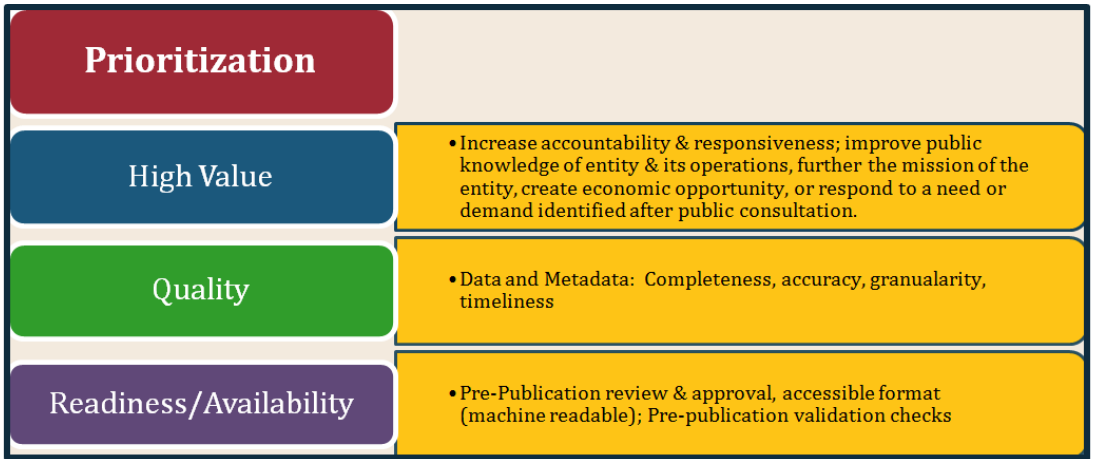
Executive Order 95 states: *"Prioritization of publication of data based on the extent to which the data can be used to increase the covered State entity's accountability and responsiveness, improve public knowledge of the entity and its operations, further the mission of the entity, create economic opportunity, or respond to a need or demand identified after public consultation..."*

Executive Order 95 further states: *"Data shall not be Publishable State Data if making such data available on the Open Data Website would…impose an undue financial, operational or administrative burden on the covered State entity or State."*

<u>Prioritizing and creating a schedule for initial and ongoing publication:</u> When creating a schedule for publication of a particular dataset, agencies need to make a judgment based upon a number of different factors.

Prioritizing initial and ongoing publication will entail balancing high value with data quality, data availability, and data readiness in setting forth a schedule for publication. Each covered State entity shall create schedules and prioritize data publication in a timely manner and in accordance with guidelines set forth herein. Agencies should assess and plan - accounting for time to: identify data, review and approve data, and prepare data for publication.

Figure 4 – Prioritization



Prioritization

High Value

- Increase accountability & responsiveness; improve public knowledge of entity & its operations, further the mission of the entity, create economic opportunity, or respond to a need or demand identified after public consultation.

Quality

- Data and Metadata: Completeness, accuracy, granualarity, timeliness

Readiness/Availability

- Pre-Publication review & approval, accessible format (machine readable); Pre-publication validation checks

Below are suggested questions, the answers to which can assist agencies in prioritizing publication of high value "publishable state data" consistent with Executive Order 95:

i. **Does the data highlight agency performance?**

ii. **Has the data ever been published or made publicly available in a machine-readable format so that it can be processed, analyzed, or re-used? Is the data "high value?"**

iii. **Might publication of the data benefit the public by setting higher standards?** The agency might be in the forefront of standards for government performance, where exposing the data might cause other agencies to raise their performance

iv. **Does availability of the data align with new State and/or Agency initiatives?** The ordering publication of any relevant datasets accordingly might be of great value.

v. **Does availability of the data align with federal initiatives or exposures of federal data?** There may be higher value in the agency's data if synergies can be created.

vi. **Does the data support decision making at the state, local, internal agency or other external agency's level, or contain information that informs public policy?**

vii. **Is the data timely? What is the dataset refresh and maintenance cycle?**

viii. **Does availability of the data align with legal requirements for data publication?** For example, there might be statutorily-required reporting which can be satisfied by publishing datasets, without necessarily needing an extensive narrative report. If the data is collected and compiled by the agency to fulfill statutory reporting requirements, then the agency's governing laws have already determined that the data is of high value for that agency.

ix. **Would availability of the data improve agency-to-agency communication?** Certain government functions may involve multiple agencies requiring access to similar data.

x. **Could availability of the data create specific economic opportunity?** In many cases, this will be unknown to the agency in advance. Some of the greatest successes of the open data movement have involved government data being commercially appropriated in useful ways, such as weather data. To the extent the agency can anticipate significant commercial use of the data, the agency may wish to order publication of such data more highly as it creates its schedule.

xi. **Could the data be useful for the creation of novel and useful third-party applications, mobile applications, and services?**

xii. **Does the data further the core mission of the agency or multiple government entities?**

xiii. **Does the data support the agency's strategic direction?**

xiv. **Does the data enable accountability and efficiency?**

xv. **Does the data have depth and breadth of years of coverage?** Release of data with high information content and quality can improve accountability and responsiveness and/or improve public knowledge of the agency and its operations.

xvi. **Does the data have accompanying metadata and a data dictionary**? Metadata and any accompanying overview documents should be comprehensive so as to provide a full understanding of the data and data elements to an end-user. This ensures version control, availability of contact information, and descriptive information sufficient for end-users to be able to use and interpret the data. In addition, where applicable, agencies should append disclaimers to highlight limitation of the data and/or prevent use of the data in misleading ways.

xvii. **Is the data accurate/complete?** The dataset must be sufficiently final or complete, such that it is currently publishable. If there is a trigger allowing the agency to publish the data at some time in the future, then scheduling publication of the data should be set accordingly.

xviii. **Is the dataset in a format that is machine-readable or can be easily transformed?** The data should be organized or formatted in a manner which is machine-readable and that can be re-used, and capable of being digitally transmitted or processed. It should be in tabular or geospatial form. Agencies should consider the level of effort required to transform the data to a machine-readable format and maintain it in such a format.

xix. **Is the data frequently requested?** As demand is known and quantifiable, this should raise the value of this data for publication. If the dataset is the type that is requested through FOIL on a recurring basis, then the agency may reduce duplication and obtain efficiencies by posting data on OPEN-NY.

xx. **Is the data needed by the public after-hours?** As demand may be known and quantifiable. Generally when there is this type of demand for the data, such datasets should be ranked, where applicable, of higher value.

xxi. **Does the data have a direct impact on the public?** The data is likely of higher value if it is already apparent there is a deep impact and interest by the public (e.g., hospital infection rates, food establishment inspection results, etc).

xxii. **Is the data in strong demand from constituencies?** The data might be of higher value to specific, narrow interest groups which may be the agency's core constituency for those issues.

xxiii. **Is the data of timely interest? And/or have there been public calls for this kind of data to be released?**

C. Disclosure Guidance

The following guidelines regarding disclosure provide sample questions for consideration, as agencies begin to identify and review datasets.

1. Do the datasets raise any Security or Privacy concerns?

- Will public posting of the data violate any laws, rules or regulations?
- Will public posting of the data pose any information security risks, either alone or if the data are combined with other publicly available data?
- Will public posting of the data violate individual privacy, or contain individually identifying information that could be used in harmful ways?

Practical effects:

Even if there are no *legal* impediments to publishing the data, might publication result in potentially harmful effects? *Example*: Would posting arrest patterns inadvertently reveal where police are concentrating efforts?

2. Disclosure thresholds:

Various statutes and regulations, such as HIPAA and its privacy regulations, have very exacting requirements for determining whether data have been sufficiently de-identified so as not to compromise individual privacy. For example, the presence of medical conditions per geographic location might constitute high-value, useful, and sought-after data; however, exposing it might identify individuals and their medical conditions.

Even in the absence of specific legal prohibitions, government entities should watch for outlier publication conditions. For example, identifying a single arrestee who is a minor of a certain age in a certain county without providing any other information, might nonetheless serve to identify that particular individual.

For particular datasets that pose such issues agencies may consider providing aggregated data based upon their laws, rules, regulations, and policies. Alternatively, agencies may set disclosure thresholds for the dataset (many agencies already adhere to such standards). For example, if a cell in a particular dataset field goes below a certain number of individuals, the value in that particular cell should be hidden. Government entities will need to balance their desires to publish accurate, complete, and valuable tabulations against the need to guard against unwarranted invasions of personal privacy, in specific situations.

3. How does FOIL apply to each dataset?

- Does the data type fit within any one of the Freedom of Information Law's (FOIL) narrow exceptions that would allow it to be withheld? Should it be withheld?

Under the NYS Public Officers Law, Article 6 (the NYS Freedom of Information Law, or "FOIL"), the presumption is that government records shall be open to the public, unless excludable under a narrow set of specific exemptions including such concerns as invasion of personal privacy, impairment of contractual or collective bargaining negotiations, exposure of protected trade secrets, interference with law enforcement or judicial proceedings, endangering life or safety, and others. Government entities should confer with their FOIL officers for publication of data on OPEN-NY, and exclude any datasets which, because their publication would cause the harms described in the FOIL law, would not constitute "**Publishable State Data**."

4. Does the agency have sufficient property rights to publish the data?

- Does the agency possess all rights to publishing the data, or publishing it in a particular form? For example, was the data collected or compiled by a third party under a contractual limitation on its publication?

- Is the public posting of the data in compliance with any intellectual property rights held by third parties to any of the data? Has your agency secured appropriate permissions, and/or provided required disclaimers, registration markers, etc.?

Government entities should exclude those datasets as warranted either in part or in full from their catalogues of data.

D. Narrative Data

Closed and proprietary file formats (e.g., PDF, PPT, DOC, DOCX, etc.) are not appropriate formats for publishing on the open data platform. The benefits of standardized open file formats that can be re-used are that they permit access to the widest range of users accessing the widest range of application systems. Datasets must be released in open file formats which are machine-readable and can be re-used (see Section V/Subheading C).

OPEN-NY serves as a platform to present machine-readable data, so that end-users may process, access, discover, extract and combine data elements to discover new insights, observations, and utility regarding the data. Still, it may sometimes be useful for limited narrative data to accompany data sets to:

- help the end-user better understand what the government entity's intentions were in collecting and publishing the data;

- avoid duplication of effort; or

- pose research questions and queries and expose ways that an end-user might add new interpretive value to the data.

Narrative documentation associated with datasets on OPEN-NY should be kept to the minimum necessary for an end-user of the platform to gain an understanding of the agency's interpretation of the data. Limit documentation to 1-2 pages for most datasets. If an agency develops extensive narrative reports about the data, then those reports should be published on the agency's website with a link provided in the agency's metadata associated with that particular dataset. It is important to keep this link current.

IV. Pre-Publication Consultations and Approvals

OPEN-NY requires agencies to engage in an internal review process and obtain approvals for the datasets which the agency wishes to commit to the OPEN-NY platform. Agencies are responsible for ensuring data content accuracy, and are responsible for ensuring compliance with all security, privacy, confidentiality laws, rules, and regulations, as well as any Intellectual Property Rights requirements and status under the NYS Freedom of Information Law (including whether data may lawfully be withheld under FOIL's limited exceptions).

For any particular dataset, at a minimum, agencies must receive explicit approval and sign-off from the individuals listed below. Standardized approval forms provided by ITS must be completed and signed prior to dataset publication. Agencies may determine additional internal approvals and signatures are required, and should include such additional personnel in their review and sign-off process.

- **Data Owner:** This is typically the head of an agency department, a bureau director, or person situated similarly within the agency and likely to have been directly involved with the collection of the data. The Data Owner will have the greatest familiarity with and knowledge of the dataset and the data it contains, and the purpose for the collection of the data. The Data Owner should know the accuracy and currency of the data, and be best able to describe and fill in the metadata elements describing the data. Approval by the Data Owner also validates that the agency has obtained permission and knowledge from the department which is most responsible for the specific data. (This may also be referred to as Program owner, or Data Steward)

- **Legal counsel (e.g. in-house or an outside attorney where applicable**): Legal counsel will likely be in the best position to determine whether the dataset has internally been reviewed sufficiently to ensure compliance with privacy and security requirements, intellectual property rights, and FOIL responsibilities. It is recommended that the legal counsel consult with the agency's chief privacy official, chief security officer, FOIL officer, or records access officer.

- **Point of Contact: (e.g., the agency's Data Coordinator):** The Point of Contact is the liaison between OPEN-NY and the agency. This person is best-positioned to convey to the Data Owner any specific needs of the OPEN-NY platform maintainers for the data to be formatted or defined in an optimal manner for publication. (For example, an individual dataset may need to be cleansed to remove extraneous, non-machine-readable elements). This person also serves as an additional internal control ensuring the dataset has been properly evaluated before being provided to OPEN-NY.

- **Chief Executive, or his/her designee**: Approval by the head of the agency ensures full knowledge within the agency and that the agency is providing a dataset to OPEN-NY under full authority to do so. It also may serve as the ultimate internal control to exercise authority within the agency to ensure proper evaluations of the datasets have been completed.

V. Data Preparation, Publication and Access

The Open New York Data platform provides an open, standards-based, RESTful application programming interface[2] to provide automatic access to the publicly published datasets within the open data catalogue. The platform will be optimized towards the developer community, technical users, and researchers and enable programmatic reuse.

A. Standardization

The way data consumers interact and use the Open Data Platform is greatly influenced by the way the data is published. The Open Data Platform requires the data publishers to present the data in a machine-readable format to enable software tools, applications & systems to process it. Instead of preprocessing the data, data consumers can directly access the raw data and customize the data for their own consumption needs.

Standardizing the data publishing model on the platform in a machine readable format enables automation leading to the development of new, friendly analysis tools. The same data can be reused for another business use case without extra processing.

As part of the standardization process, the Open New York Data platform has identified the following minimum requirements:

- Standardized Metadata Attributes

Common Metadata

The platform will support a common and fully described core metadata scheme for each hosted dataset and API within the data catalogue. The metadata scheme would allow data publishers to classify selected contextual fields or elements within their dataset as well as adhere to common Meta attributes identified platform-wide empowering the data consumers to build automated discovery mechanisms at a granular-level. Using a common metadata taxonomy will allow Open New York to convey and increase discoverability of high-value datasets

- Standardized Machine-Readable File Formats

In order to facilitate automatic processing of the data, make it easily accessible and available in machine-readable formats, standardized open data file formats for data publishers and data consumers would be made available so that they can be uploaded, retrieved, indexed and searched.

Datasets published to the Open New York platform are machine-readable and have a clear separation of metadata from the original source data. Data Consumers will be able to automate the process of discovery, accessibility and ingestion by using the uniform open data formats supported by the platform.

[2] An Application Programming Interface, or "API," is a set of routines, protocols, and tools for building software applications that enable software components to interact with each other. See section V(D), below. "REST" (Representational State Transfer) is a type of software architecture for networked, distributed systems.

- Standardized Domain Categories

Common Domain

The platform supports a common domain model that allows data publishers to identify, transform and anchor datasets in a particular domain. Using a common scheme based on categories and tags, Open New York standardizes the available domains within the platform, thus helping data consumers to retrieve datasets readily and uniformly using either the standard core metadata or extending the search using domain-specific metadata

B. Dataset Metadata

Open.ny.gov adheres to core components of the Dublin Core standard for metadata (http://www.dublincore.org/documents/dces/). The ability to search and find information is enhanced by the adherence to metadata standards required with each dataset. In addition, metadata is linked to subject categories which provides for more precise searching and document management.

Adoption of the Dublin Core, together with standards for Open Data, maximizes adaptability and interoperability.

1. Metadata elements and definitions

The Dublin Core Metadata Initiative (DCMI) is incorporated as a non-profit organization hosted at the National Library Board of Singapore. Its lists of elements, glossary, and FAQs were last revised in 2005, but an effort to update its User Guide is being developed at the wiki page http://wiki.dublincore.org/index.php/User_Guide. OPEN-NY uses the current set of elements, which are required to accompany each dataset and are incorporated as follows:

OpenNY Metadata Elements	Description	Dublin Core Value
Dataset Name / Title	The name of the dataset as it will appear on the platform.	Title
Dataset Description	Short description that explains the purpose of the Dataset and the data within	Description
Category	The general category that the dataset is included in on the site (The categories include: Economic Development, Education, Energy & Environment, Government & Finance, Health, Human Services, Public Safety, Recreation, Transparency, and Transportation).	Type
Tags / Keywords	Keywords about the dataset used for searching purposes.	Subject
Data Provided By	The Agency that provided the data.	Contributor
URL to Dataset Program Web Page	The URL to the program area web pages.	n/a
Responsible Organization Within Agency	The organization that the dataset owner is a part of	Creator

Time Period	The timeframe of data available in the associated data file (e.g., Beginning 2005).	Coverage (temporal)
Create Date	The date the resource was made available in its present form – auto generated	Date
Posting Frequency	How often the Dataset will be refreshed (e.g., Annually, Monthly, Daily).	n/a
Contact e-mail information	The email address the viewers of the data can use to ask questions about the dataset	n/a
Coverage	The coverage area included in the dataset (e.g., Statewide).	Coverage (spatial)
Granularity	The lowest levels of granularity available within the data file (ex. County).	n/a
Define any limitations	Description of any limitations of the Dataset or exclusions.	Rights
URL(s) to additional resources (optional)	URLs to additional resources that may be useful to an end-user	Relation
Narrative Information		
Overview Document	one to two page document that explains the dataset in greater detail, explains the data collection process, and any limitations in the data use	n/a
Data Collection Tool / Data Input	Explanation of the data collection methodology	n/a
Data Dictionary and / or Data file layout	Data dictionary should explain the fields within the dataset in terms of their definition, type, size, and any other pertinent information that describes the dataset	n/a
Benefit of Utilizing Dataset (optional)	Additional supporting documentation can include a data collection/input tool, a benefits document that describes what can be gained from analyzing the data	n/a

C. Datasets

The Open Data Platform supports two classifications of datasets: tabular and geospatial. A tabular dataset is a flat file that conforms to a predefined schema. The schema defines the characteristics of a fixed number of columns, including the column name and data type. A geospatial dataset contains information that can be readily rendered on an underlying map. Examples of geospatial features include points (buildings), polylines (bus routes), and polygons (school districts), along with attribute information that describes characteristics of each spatial feature.

1. Tabular Datasets

a. Input File Formats

The current Open Data Platform supports a variety of popular and standard tabular input file formats.

- **CSV & TSV**: Comma/Tab Separated Values
- **XLS & XLSX**: Microsoft Excel Formats

b. Export File Formats

Datasets can be exported for download in popular human-readable formats, machine-readable standards and streamable file formats. The Open Data Platform currently supports the following exportable tabular file formats:

- **CSV**
- **JSON**
- **PDF**
- **RDF**
- **RSS**
- **XLS**
- **XLSX**
- **XML**

c. Large File Support

Public data often consists of historical archives, comprised of potentially millions of records collected over an extended period of time. The Open Data Platform supports the loading, exporting and visualization of large datasets (> 1GB).

d. Geocoding

The Open Data New York Platform supports geocoding services which convert human-readable address information into mappable coordinates (Latitude/Longitude).

2. Geo-Spatial Datasets

a. Input File Formats

The Open Data Platform supports two data formats for geospatial information. The appropriate format is dependent on the specific characteristics of the underlying geographic data.

- **Points**: All Tabular File Formats or Shapefile
- **Polylines**: Shapefile
- **Polygons**: Shapefile

Point data can be stored in either tabular or shapefile format. Tabular formatting of points requires either columns for latitude and longitude, or complete address information that can be geocoded. In contrast, polylines and polygons define complex geometric structures that are not easily defined as column attributes. Therefore, shapefile format is a preferred format for these complex geographic structures.

Each shapefile (at a minimum) should contain the following files:

- **.shp**: Defines the geometry (shapes)
- **.dpf**: Defines the attribute table
- **.prj**: Projection, ensures the feature locations are accurately rendered on the map
- **.shx**: Shape indexing file, for efficient processing

Other supported geospatial formats may include KML, KMZ.

Geospatial data is usually organized as a collection of features that define a layer. Layers can be overlaid on top of one another, allowing visualization spatial relations, spatial queries, and analysis.

b. Export File Formats

Geospatial data contains geographic features and attribute data that defines the properties of geographic features. Attributes are stored in a tabular format with unique key references to the associated geographic features. Two export methodologies are supported for exporting geographic information: geospatial and attribute. Attribute layers can be exported as tabular data export file formats as identified earlier in C.1.b.

Geospatial information can be exported in the following formats:

- **Shapefile**
- **KML**
- **KMZ**

D. Application Program Interface (API)

All data on the platform can be consumed via an Application Program Interface (API) which provides direct access to the raw data for developers.

a. Access to Datasets

The Open New York Platform supports the existence of an API Strategy that allows the developer community to dynamically query a dataset within the data catalogue. Each hosted dataset within the data catalogue will:

i) Be readily and uniformly accessible.
ii) Be available for automated processing by applications and systems
iii) Have a standard API Endpoint

The Endpoint points to a RESTful implementation of the underlying dataset that has been accessed. All communication with the API is done through an HTTPS protocol. The platform provides the following preferred response types which are made available by the “extension” of the API or by HTTP “Accepts” headers:

(a) JSON
(b) XML

(c) CSV
(d) RDF

b. Featured API Catalog

Additionally, the Open New York Platform supports the creation of a featured API Catalog that provides custom endpoints to the developer community to dynamically query the raw dataset based on "specified" dataset elements. The featured API Catalog is categorized and tagged using the common domain and metadata schema identified in Section A and Section B.1.

E. Data Refresh Process

Specific guidance regarding refresh will be addressed in technical and working documents previously referenced. Four mechanisms are supported for refreshing a dataset:

- **Replace:** All existing records are removed and new records are inserted.
- **Append:** New dataset records are inserted
- **Update:** Existing records are modified
- **Delete:** Existing records are removed

The frequency of updates is included in the metadata each provides with each dataset (see metadata posting frequency).

VI. Open-NY Terms of Use

The OPEN-NY Terms of Use may be found on the OPEN-NY website at the following link: https://data.ny.gov/download/77gx-ii52/application/pdf The terms are subject to modification as conditions warrant. When the Terms of Use change, this will be indicated within the Terms themselves with notification of the "Last Modified Date.

Appendix

EXECUTIVE ORDER 95

USING TECHNOLOGY TO PROMOTE TRANSPARENCY, IMPROVE GOVERNMENT PERFORMANCE AND ENHANCE CITIZEN ENGAGEMENT

WHEREAS, the State possesses vast amounts of valuable information and reports on all aspects of life in New York State, including health, business, public safety, and labor data as well as information on transportation, parks, and recreation; and

WHEREAS, new information technology has dramatically changed the way people search for and expect to find information, and such technology can aggregate ever larger quantities of data and allow government to provide information to the public with increasing efficiency; and

WHEREAS, the State can use these powerful tools to enhance public access to government data and make government in New York State more transparent in order to promote public trust; and

WHEREAS, ensuring the quality and consistency of such data is essential to maintaining its value and utility;

NOW, THEREFORE, I, Andrew M. Cuomo, Governor of the State of New York, by virtue of the authority vested in me by the Constitution and laws of the State of New York, do hereby order as follows:

A. Online Website. An online Open Data Website for the collection and public dissemination of Publishable State data, and, to the extent feasible, reports is hereby established. The Open Data Website shall be maintained at data.ny.gov or such other successor website maintained by, or on behalf of, the State, as deemed appropriate by the New York State Office of Information Technology Services in consultation with the Governor's Office and Data Working Group established below. The Open Data Website will provide "single-stop" access to Publishable State data that is owned, controlled, collected or otherwise maintained by covered State entities as defined herein and, to the extent feasible, reports of such covered State entities.

B. Definitions. As used herein, the following terms shall have the following meanings:

1. "Covered State entity" means (i) any State agency or department, or any office, division, bureau, or board of such State agency or department, except where the head of such agency or department is not appointed by the Governor, (ii) any State board, committee, or commission, at least one of whose members is appointed by the Governor, and (iii) all public-benefit corporations, public authorities and commissions, for which the Governor appoints the Chair, the Chief Executive, or the majority of Board Members, except for the Port Authority of New York and New Jersey.

2. "Chief Data Officer" shall mean the New York State Chief Data Officer in the Office of Information Technology Services or a designee thereof;

3. “Data” shall mean final versions of statistical or factual information that (i) are in alphanumeric form reflected in a list, table, graph, chart or other non-narrative form, that can be digitally transmitted or processed; (ii) are regularly created or maintained by or on behalf of a covered State entity and are controlled by such entity; and (iii) record a measurement, transaction or determination related to the mission of the covered State entity. The term “data” shall not include image files, such as designs, drawings, photos or scanned copies of original documents; provided, however, that the term “data” shall include statistical or factual information about image files and geographic information system data.

4. “Data set” means a named collection of related records maintained on a storage device, with the collection containing data organized or formatted in a specific or prescribed way, often in tabular form.

5. “ITS” shall mean the New York State Office of Information Technology Services.

6. “Publishable State data” shall mean data that is collected by a covered State entity where the entity is permitted, required or able to make the data available to the public, consistent with any and all applicable laws, rules, regulations, ordinances, resolutions, policies or other restrictions, requirements or rights associated with the State data, including but not limited to contractual or other legal orders, restrictions or requirements. Data shall not be Publishable State data if making such data available on the Open Data Website would violate statute or regulation (e.g., disclosure that would constitute an unwarranted invasion of personal privacy), endanger the public health, safety or welfare, hinder the operation of government, including criminal and civil investigations, or impose an undue financial, operational or administrative burden on the covered State entity or State;

C. Open Data Website Administration

1. The Open Data Website shall be administered by ITS.
2. The Chief Data Officer (“CDO”) and the Chief Technology Officer within ITS shall coordinate implementation and expansion of the Open Data Website to facilitate the sharing of information and initiatives resulting from developments based on this Order.
3. Within 30 days after the date of this Order, each covered State entity shall designate a Data Coordinator, who shall: (i) have authority equivalent to that of a Deputy Commissioner or the head of a division or department within the covered State entity; (ii) have knowledge of data and resources in use by the entity; and (iii) shall be responsible for that covered State entity’s compliance with this Order.
4. Within 45 days after the date of this Order, ITS and the CDO shall establish a Data Working Group (“DWG”) made up of representatives from ITS and the Information Security division of ITS, the New York State Office of General Services, the Division of Budget, a representative from the Department of State with expertise in local government and at least eight but no more than twelve Data Coordinators, who shall represent an appropriate cross-section of covered State entities. The DWG shall assist the CDO in carrying out his or her duties under this Order.

D. Publication of Data. All covered State entities shall make their Publishable State data available on the Open Data Website as follows and in accordance with the Open Data Handbook to be promulgated by ITS:

1. Each covered State entity shall create a catalogue of their Publishable State data within 180 days after the date of this Order.

2. Each covered State entity shall, within 180 days after the date of this Order, propose a schedule to ITS and the CDO for making its Publishable State data publicly available. Such schedules shall be made publicly available and provide for updating the data catalogue as appropriate.
3. Each covered State entity shall create schedules and prioritize data publication in accordance with guidelines set forth in the Open Data Handbook.

E. Opportunity for Localities to Participate. Localities are invited, and are encouraged, to submit data to the Open Data Website for publication in accordance with guidelines set forth in the Open Data Handbook. ITS shall assist localities so they may use the Open Data Website. Such assistance shall include, but not be limited to, technical assistance and expertise, and accommodations shall be made for variations among local governments' capacity and equipment.

F. Open Data Handbook. ITS, in consultation with the DWG, shall issue guidance to covered State entities on implementing this Order in the Open Data Handbook.

1. The Open Data Handbook shall:
    1. provide models and guidelines for covered State entities to follow when creating their data catalogues;
    2. provide guidance to covered State entities on setting a schedule for initial and ongoing publication of data on the Open Data Website including but not limited to requiring:
        1. consultation with the directors and staff of the covered State entity's public affairs or public information, legal and Freedom of Information Law ("FOIL") offices;
        2. prioritization of publication of data based on the extent to which the data can be used to increase the covered State entity's accountability and responsiveness, improve public knowledge of the entity and its operations, further the mission of the entity, create economic opportunity, or respond to a need or demand identified after public consultation;
    3. provide guidelines for identifying and reviewing publishable State data by covered State entities before publication;
    4. provide uniform standards for the format of data submitted for publication on the Open Data Website;
    5. set forth the Open Data Website terms of use;
    6. provide guidelines on participation by agencies and authorities other than covered State entities and participation by localities;
    7. provide guidance on the publication of narrative data, such as reports; and
    8. set forth any further definitions and guidance necessary for the implementation of this Order.
2. Within 90 days after the date of this Order, ITS shall issue a provisional Open Data book. Within 240 days after the date of this Order, ITS shall issue a final Open Data Handbook.
3. The provisional and final Open Data Handbook shall be made public by ITS and the CDO, including through the Open Data Website. ITS shall solicit and consider comments and suggestions related to the Handbook from State agencies, authorities, localities and the public.
4. The Open Data Handbook may be amended by ITS from time to time.

G. Notification to the Public of Ongoing Publication of Data. The public shall be notified of additions and updates to the data catalogue contained on the Open Data Website.

H. Participation by Other State Entities. New York State agencies and authorities other than covered State entities shall be permitted, and are encouraged, to submit data to the Open Data Website for publication in accordance with guidelines set forth in the Open Data Handbook.

I. Covered State entities and all other participating agencies, authorities and localities shall not be prevented from publishing data in advance of the dates set in their schedules if the data has been approved for publication by ITS.

GIVEN under my hand and the Privy Seal of the State in the City of Albany this eleventh day of March in the year two thousand thirteen.

BY THE GOVERNOR
Secretary to the Governor