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# **OPEN DATA IN CALIFORNIA**

**Why the State Needs a Unified Strategy for Public Information**

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Jason Barrett and Kevin Klowden

## Introduction

For as long as there have been governments, there has been government data. From census information to climate statistics, governments all over the world have been collecting data from all corners to help them perform all manner of administrative duties. Simply put, data is knowledge. Through surveys, monitoring, and statistical analysis, governments gather relevant information from innumerable sources and use this data to decide how to govern appropriately.

Today, as more and more information is collected, there is a growing global movement for governments at all levels to make machine-readable data available to all interested persons. Open data has the potential to enhance government transparency and efficiency as well as create economic development opportunities all over the world—and this would certainly be the case in California. Thus far, however, California is hardly a pioneer on the open-data frontier: It is not even among the 10 states that have developed open-data policies.

In fact, more than any other state, California needs a unified open-data strategy for at least three major reasons. First, such a strategy would be crucial to maintaining the state's position as the nation's leader in cutting-edge technology development. One of California's enduring economic advantages has been the innovative capital found in tech hubs like Silicon Valley. Open data would provide tech-savvy entrepreneurs with the tools they need to open and expand businesses in the state.

Second, California is the largest state in the union in terms of population and economic output. This means it has the potential to capitalize on a vast amount of information collected by public agencies. However, as municipalities and state agencies continue to develop their own independent open-data portals, more and more differences in formatting and coding structure emerge. This makes it difficult to unify data sets into a single location.

Third, California continues to suffer from its reputation for overregulation and having a burdensome permitting process that discourages businesses from expanding in the state. By providing a single reference point for agency cooperation and applicant communication, state officials can take a big step in battling that image.

Federal, state, and local government entities around the country have begun to recognize that the value of open data is undeniable, but its growth must be managed to ensure that its potential is properly realized. We hope this white paper will serve as a guide for state officials to develop an open-data policy that will enhance access to information and improve the lives of all Californians.

## Benefits of open data

There are several benefits that can be seen from the release of government data for public use. For the purposes of this paper, we will examine three key areas where California stands to benefit the most from an open-data policy.

### Government transparency

Taxpayers demand accountability from government entities. However, when individuals, such as researchers, journalists, or other interested parties attempt to collect information about government

expenditures, they often find vague or outdated information about how their tax dollars are spent. In California, any open-data policy must include mandates for how often budgetary information is updated. Maintaining current and accurate data portals would encourage citizen engagement and save time for government officials and employees responding to individual requests.

### **Government efficiency and cost savings**

As the Milken Institute has noted in previous research publications, one of the biggest obstacles to economic development in California has been the overwhelming permitting process that entrepreneurs face when looking to create jobs in the state.<sup>1</sup> New companies that seek to open shop find an often slow and bureaucratic permitting process. Business owners attempting to obtain proper permits have to wind their way through several agencies, none of which are accountable to one another.

Implementing an open-data policy that requires participation by all agencies has the potential to significantly streamline the permitting process by unifying information from multiple agencies a single online location. Through such a unified portal, a permit seeker could find the status of his or her application, update it as necessary, and identify which agencies still need what information without having to contact each agency individually. A policy that emphasizes user interface and ease of use on the front end would drastically increase access to key data sets, both from private citizens and other government agencies.

The possibilities of open data on intra-governmental and inter-governmental collaboration extend far beyond permitting. Imagine if the Department of Transportation wanted to build a road through a wooded area with dense wildlife populations. Architects could incorporate conservation efforts into their design by cross-referencing their plans with migratory patterns collected by the Department of Wildlife without having to submit official requests.

In reality, as agencies continue to develop their own databases, there is little collaboration on the formatting of information. Data sets are kept in multiple formats that cannot be merged into a single database until they have been “cleaned.” This results in needless delays as staff from two agencies collaborating on projects comb through their respective data. A unified open-data policy would solve these issues as data sets are reformatted with machine-readable standards.

Through open data, governments make accessible to the public information that would otherwise have to be requested through official channels, such as a Freedom of Information Act (FOIA) request. The potential for government savings through the reduction of FOIA requests alone is remarkable. Reinvent Albany, a nonprofit aimed at promoting good government practices in New York state, discovered that, simply by publishing data related to spills on properties around the state, the State Department of Environmental Conservation could potentially reduce its FOIA workload by 55 percent.<sup>2</sup>

By releasing similarly high-demand data sets, California could enjoy the benefits of reduced workloads across all agencies. If the annual operating cost of the California Department of Conservation were

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1. Milken Institute, “Effective Government and Economic Expansion: How California Is Improving Permitting and Communication to Spur Business,” July 2014,  
<http://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/GovEffect.pdf>.

2. Reinvent Albany, “Listening to FOIL: Using FOIL Logs to Guide the Publication of Open Data,” July 2014,  
<http://reinventalbany.org/wp-content/uploads/2014/07/Final-DEC-FOIL-Analysis.pdf> (accessed February 9, 2015).

reduced by just 2 percent through open-data policies, this single agency could save the state nearly \$2 million a year.

### **Economic development**

With open data comes open analytics. The right data in front of the right person at the right time can lead to a new startup that becomes a Fortune 500 company. With common-sense safeguards related to privacy and security, open data has provided a boon to new and existing enterprises all over the world.

In an analysis of several economic development and cost savings factors, a McKinsey report placed the value of all the data in the world at over \$3 trillion, with the U.S. alone realizing over \$1.1 trillion in economic potential.<sup>3</sup> McKinsey summarized the impact of open data on key sectors by evaluating how open data can affect decision-making, procurement, and transparency.

One of the most well-known employers utilizing open data is Zillow, a website that visualized real estate data in user-friendly ways. Based in Seattle, it is a prime example of a private enterprise employing open government data to create a new product—in Zillow’s case, a product valued at nearly \$7 billion by Bloomberg.

Among California-based companies is Appallicious, an open-data civic startup producing apps that visualize government services. The company’s founder, Yo Yoshida, attributes a large part of his company’s success to access to open data published by local governments around the state.<sup>4</sup>

Here are other California-based examples of open-data use:

- Crimespotting is an app developed in San Francisco that informs residents of recent police activity in their neighborhood.
- San Mateo County has created a one-stop shop for all local community services offered to individuals in need.
- Oakland has launched an initiative called RecordTrac to expedite requests for public records made by residents.
- OpenGov, a private firm in Mountain View, specializes in data visualization. It transforms the budgetary expenditure information of its government-entity clients into customizable charts and graphs, maximizing readability and ease of use for users.
- Open Counter simplifies permitting applications for potential entrepreneurs interested in opening a business in client cities.
- The Rural-Urban Connections Strategy, developed in Sacramento, is a tool for local rural stakeholders to evaluate land-use objectives in the area.

In addition, Esri, a GIS-mapping software development company located in Redlands, in San Bernardino County, has realized the value of open data firsthand in its recent growth. The company’s ArcGIS

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3. McKinsey, “Open data: Unlocking innovation and performance with liquid information,” October 2013, [http://www.mckinsey.com/insights/business\\_technology/open\\_data\\_unlocking\\_innovation\\_and\\_performance\\_with\\_liquid\\_information](http://www.mckinsey.com/insights/business_technology/open_data_unlocking_innovation_and_performance_with_liquid_information) (accessed February 18, 2015).

4. California Economic Summit, “Capitol Day mines the economic opportunity of open data,” <http://www.caeconomy.org/reporting/entry/video-capitol-day-mines-the-economic-opportunity-of-open-data> (accessed January 19, 2015).

software came online in April 2014 and utilizes open data from government entities as well as users to develop analytics-based strategies for a wide variety of businesses and clients.

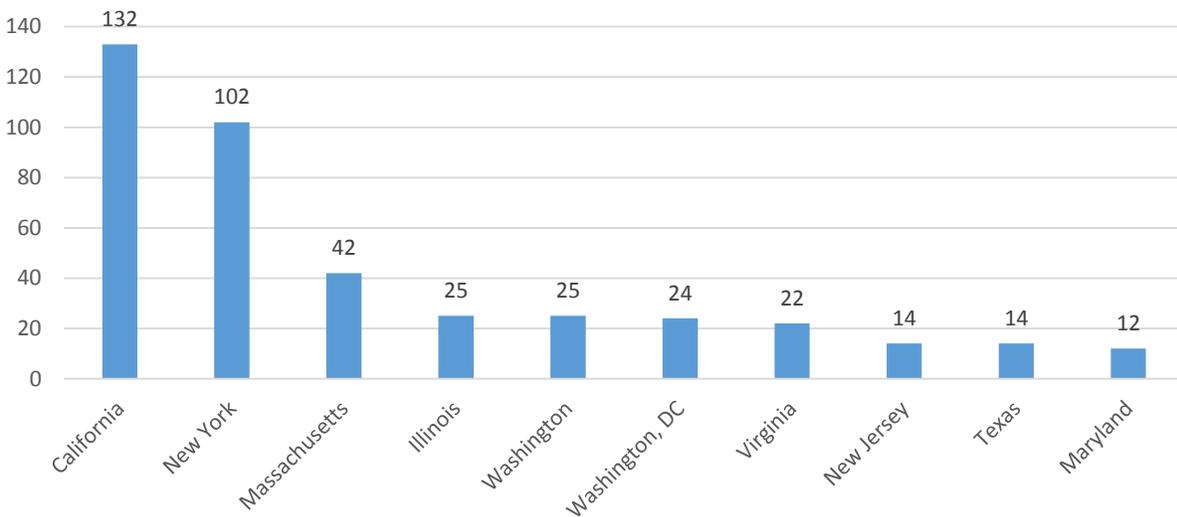
While many agency officials are aware of the potential value of their data, most do not have the resources to leverage it. Private enterprises, when granted access to this data, have the ability create jobs by finding new ways to generate value from it.

## Why California needs a statewide open-data policy

Despite open data’s relative infancy, California’s private sector has already seen the benefit of new and expanded access to government records in massive quantities. The Open Data 500, a comprehensive study of U.S. companies that use open government data to generate new business and develop new products and services, currently names California as the home of 132 of the 500 companies on their list.<sup>5</sup>

This illustrates a strong recognition in California’s business community of the value of open data and provides a clear incentive for California lawmakers to develop a policy at the state level. Innovators in California have already begun to take advantage of open-data opportunities around the country. By formalizing a state policy, and granting access to massive archive of data, the state government can offer a direct, immediate, and positive impact to these entrepreneurs

**Figure 1. Number of companies in Open Data 500, by state**



5. Open Data 500, “Open Data 500 Companies,” <http://www.opendata500.com/us/list/> (accessed January 8, 2015).

Although it is home to some of the most innovative technology ideas in the world, California has not established itself as a leader in developing a unified open-data policy. While some entities in the state have developed independent open-data projects—the office of the Controller, for example, recently opened a data portal that publishes city and country expenditure data—California still lacks a cohesive state policy that standardizes this data and makes it readable across multiple platforms. If left unchecked, individual open-data portals will continue to grow, making it more and more difficult to regulate their content and virtually impossible to house it all in a single, searchable database.

Agencies with independent open-data portals will also use their own agency resources and priorities to update data sets. These decisions may not necessarily reflect the most sought-after or helpful data. As agencies create new portals, there is a tendency to initially publish data that is easily obtained or data that has been published elsewhere as the foundation for their databases. A unified statewide policy will lay out a roadmap to ensure that the most relevant data is published early and updated frequently.

These realities highlight the need for a unifying policy set by the state government on open data. As of August 2014, the Center for Data Innovation lists 10 states that have statewide open-data policies.<sup>6</sup> If California is to maintain its reputation as the American hub of technological innovation, it must add its name to that list as soon as possible.

## What an open-data policy in California would look like

A properly implemented state open-data policy would have many components. Aside from standardizing file and data formats, mandating machine-readability, and other requirements already discussed, there are other items that an open-data policy must contain.

### Treatment of data

Of key importance is the way the policy would handle the raw data itself. As the California Economic Summit Open Data SOAR (Streamline Our Agency Regulations) Team points out, data should be:

1. **High-quality:** Data should be as complete as possible, vetted for reasonability and accuracy, and include, when available, historical data to put current data in context. The New York State Open Data Handbook provides a great deal of guidance in identifying, “cleaning,” and publishing high-value data sets, including evaluation questions to guide officials in selecting data sets to post.<sup>7</sup>
2. **Respectful of privacy and security concerns:** Data should be released in accordance with state and federal regulation around individual privacy; no data should be released that might threaten public safety. New Hampshire codifies privacy and security concerns in its open-data laws.<sup>89</sup>

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6. Center for Data Innovation, “State Open Data Policies and Portals,” August 2014, <http://www.datainnovation.org/2014/08/state-open-data-policies-and-portals/> (accessed February 3, 2015).

7. Open New York, “Open Data Handbook: New York State Open Data Initiative,” <http://ny.github.io/open-data-handbook/?1425938288243> (accessed December 9, 2014).

8. Utah Code 63A-3-403.

9. Maryland State Government Article, Chapter 69, Section 10-1401 through 10-1404

3. **Well-documented:** Data should include robust metadata—a description of its source, license, topic, and explanation of any unclear terms—written in plain English for public consumption. The White House issued a memorandum to agency heads outlining proper use of metadata in data sets after President Obama announced his federal open-data policy in 2013.<sup>10</sup>
4. **Up-to-date:** Data should be refreshed with up-to-date information on a regular basis and as frequently as possible. Hawaii’s open-data law explicitly mandates the regular updating of data sets in order to “preserve the integrity and usefulness of the data sets.”<sup>11</sup> This does not mean that data should be rushed or made available when incomplete, but rather should be published on a consistent, timely, and predictable schedule.
5. **Permanent:** Barring substantial issues with any of the above requirements, open data should be considered permanently open. That is, it should not be deleted or removed from the public view. Utah cites the need for permanency in its open-data statute.<sup>12</sup> Not committing to a permanent open-data standard raises serious concerns about investments in the infrastructure for open data and the level of commitment by the state government. This can deter overall investments at both the local level and in the private sector.

### High-value data sets

The first mass publication of open data should always be those data sets that provide the most internal and external value. As Reinvent Albany discovered, analysis of FOIA requests around the state can help officials identify high-value data sets.

State officials in New York took the next step in identifying data sets for publication through a series of analytical questions, including determining what data has already been published, conducting a self-audit of all data collected by agencies, and identifying which types of data agencies use for various projections.

### Implementation and execution

After an executive order is issued, it is imperative that key managerial and internal government arrangements are made to implement an open-data policy properly. Such a policy should include the creation of a position for a chief data officer (CDO) at the state level. Colorado pioneered this approach in 2010, and several states have followed suit since.<sup>13</sup> The CDO will be the point person in implementing any open-data policy issued by the governor’s office.

Among the CDO’s chief duties will be to provide guidance to state agencies on proper execution of the policy, collaborate with city and county officials to improve the effectiveness of their own open-data

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10. Executive Memorandum M-13-13, “Open Data Policy-Managing Information as an Asset,” May 2013, <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>.

11. Hawaii Revised Statutes, Division 1, Title 4, Chapter 27.

12. Utah Code 63A-3-403.

13. Government Technology, “Which States and Cities Have Chief Data Officers?” June 2014, <http://www.govtech.com/state/Which-States-and-Cities-Have-Chief-Data-Officers.html> (accessed January 9, 2015).

plans, and supervise the responsibilities of updating and maximizing the front-end user experience of the state's open data portal.

Even without a statewide policy, the CDO is a key position that can help government operate more efficiently with the assistance of the analytics related to open data.

The quality of a state's open-data policy is entirely dependent on the desire and ability of state agencies to implement it. As any policy is being crafted, it is imperative that officials from all covered agencies be consulted and informed of its development.

### **What would it cost?**

Since open data refers to the publication of data that has already been accumulated, it would be a relatively low-cost endeavor to execute a new policy. However, there would be some necessary expenditures, to ensure maximum efficiency.

The largest cost of open data is generally associated with server space to house the data. The state would have several options to achieve this; among them is to purchase and maintain the servers themselves, or to outsourcing those costs to a vendor like Socrata. New York, for example, has retained Socrata for this purpose.

Additional costs are related to labor and man-hours. Based on open-data labor statistics from the state of New York, California can expect to spend about \$4 million to \$5 million in annual salaries for full-time and part-time management, development, and implementation of a fully functioning open-data policy. As more and more data is generated for publication, larger staffs will be required to "clean" and update the data as needed. These costs will be realized particularly early in the process, as existing open-data portals will need to be updated to comply with the new policy.

These initial costs would be an investment that would more than pay for itself over several years. An open-data program would create extensive opportunities for government savings from resulting efficiencies, as well as expanded tax revenue from new business development. With a moderate amount of short-term spending, California stands to gain from exponentially larger long-term benefits.

These financial benefits must be emphasized when seeking political support for an open-data policy in California. The economic development and government savings opportunities are real.

## **Open data around the country**

Efforts must be made in California to distinguish between a simple government-transparency website and a full open-data portal. While all 50 states have an open-data portal in some form, approximately half are related almost exclusively to government expenditures and revenue. While these states should be applauded for their efforts in publicizing government activities, the data they publish does little to encourage economic development opportunities in the state.

There are currently 10 states that have statewide open-data policies in place, all of which have been implemented in the last four years. Through a mixture of executive and legislative action, these states have led the way in developing and enforcing standards in government data policies.

**Table 1. States with open-data policies**

| <u>By executive order</u> | <u>By legislation</u> |
|---------------------------|-----------------------|
| Connecticut               | Hawaii                |
| Illinois                  | New Hampshire         |
| Maryland                  | Oklahoma              |
| New York                  | Texas                 |
| Rhode Island              | Utah                  |

## Utah

As one of the most recent examples of a state implementing a formal policy, Utah’s legislature passed Senate Bill 283 in 2013 and Senate Bill 70 in March 2014. The state bills created the Utah Transparency Advisory Board and directed it to establish and implement an open-data policy with several key components, including:

- Determination of which data sets should be published
- Evaluation of privacy concerns
- Enforcement of record standardization
- Establishment of a website as the single point of access for the published information

The Utah Office of the Legislative Fiscal Analyst estimated an initial, one-time cost of \$75,000 and expenditures of \$540,000 per year through FY 2016.

## New York

The state of New York can serve as a model for the implementation of California’s open-data policy, based largely on the state’s relative size and the comprehensiveness of its program. It published the New York State Open Data Handbook, which has subsequently served as the foundation for open-data policies elsewhere, and could do the same for California.

State officials had developed the handbook as a one-stop shop for city, county, and state agencies implementing open-data policies. It details best practices for executing an open-data policy—website development recommendations, data standardization, and guidelines for participating agencies, among others—and also serves as a resource to help policymakers ask the right questions when crafting their own policies.

Questions included in the handbook are:

1. Does the data highlight agency performance, or might publication of the data benefit the public by setting higher standards?
2. Has the data ever been published or made available in a machine-readable format so that it can be processed, analyzed, or re-used?
3. Does availability of the data align with new state and/or agency initiatives?
4. Would availability of the data improve agency-to-agency communication?
5. Could availability of the data create specific economic opportunity?

The most sought after data sets in New York might not necessarily mirror the most popular data sets in California, so the need to ask the right questions becomes clear. Deep-dive analyses of California industries and citizen engagement would be required to identify the most valuable data sets.

For example, in California, the most sought-after data sets would certainly include environmental issues related to the California Environmental Quality Act (CEQA), oil and gas development, and seismology data. These data sets should be prioritized along with more traditional data sets related to transparency, such as revenue and expenditure data, and items intended to enhance government efficiency, such as permitting information.

## **Texas**

Texas, among the early adopters of a state open-data policy, opened its portal at [data.texas.gov](http://data.texas.gov) last year. Another Socrata client, Texas illustrates a beneficial best practice by creating easy-to-use self-service options for agency officials to upload new data sets.<sup>14</sup> While open-data portals tend to focus on providing service to front-end users, back-end users should not be ignored. Open data is only as valuable as it can be made by the government workers responsible for “cleaning” and uploading it.

While offering an effective implementation and accessibility strategy, Texas’ policy does not mandate machine readability, nor does it mandate the publication of data sets beyond those related to government transparency. Rhode Island’s policy is similar in this regard.<sup>15</sup> While the Texas open-data portal does contain several non-transparency data sets, the lack of legal requirement may result in a decrease in effectiveness as the portal grows. Furthermore, by not applying the law to the other data sets, there is a real risk that they may diverge from the state standard and become less useful over time.

## **Massachusetts**

The need for a formalized state policy is no more apparent than in Massachusetts. The state established CommonWiki in 2009 as an initial open-data portal. The portal was created to provide access to both government officials and the general public to valuable data sets published by the state. Since its implementation, though, the vast majority of updates seems to be available only to a very limited group; to access most data sets, a login screen appears allowing only users from certain domain names—those within the Massachusetts government and other invited groups—to register.

The lack of a formal state policy that mandates publication of high-value data viewable by the general public has vastly decreased the value of CommonWiki. The portal was opened under the auspices of the Massachusetts Open Data Initiative. Ironically, the strategic plan pertaining to the initiative is also behind the very registration wall that prevents it from being open in the first place.

Data that is available only to a very select group of individuals can hardly be considered “open.” Further, the “wiki” style—which allows any registered user to edit the content of a page—does not adhere to best practices regarding the publication of data sets.

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14. National Association of State Chief Information Officers, “States and Open Data: From Museum to Marketplace—What’s Next?” May 2014, [http://www.nascio.org/publications/documents/NASCIO\\_EAOpenData\\_May2014.pdf](http://www.nascio.org/publications/documents/NASCIO_EAOpenData_May2014.pdf) (accessed February 8, 2015).

15. Center for Data Innovation, “State Open Data Policies and Portals,” August 2014, <http://www.datainnovation.org/2014/08/state-open-data-policies-and-portals/> (accessed February 3, 2015).

As it stands, there appears to be no centralized location for the general public to obtain any measurable amount of high-value data from the Massachusetts government. Despite the state's progressive stance on leveraging technological assets—Massachusetts typically places at or near the top of the Milken Institute State Technology and Science Index<sup>16</sup>—leadership on public open data from state officials has yet to emerge.

### **Executive order vs. legislative action**

California's governor enjoys wide-ranging authority on executive orders. Without the need for legislative review, the governor could issue an open-data policy unencumbered by the changing makeup of the state legislature. Of course, this poses long-term risks, as a future governor could alter or even withdraw the policy. Legislative action may also be seen as more reflective of the will of the electorate. As a compromise between these two options, open-data initiatives in Maryland and Illinois were issued by executive order and then later implemented and amended through legislative action.

With legislative action, there is also the threat of veto, as governors may feel territorial over an issue they have already addressed through executive action. When crafting legislation meant to codify a governor's executive order, lawmakers should work closely with the governor's office in developing its language.

In some states such as Ohio, legislation was passed *after* an executive order was issued. This method has the advantage of having both the immediate impact of an executive order and the long-term stability offered by a statute.

New York State is currently seeking legislation that codifies Gov. Andrew Cuomo's executive order. An attempt was made last year, but failed in committee due to a lack of detailed information that satisfied lawmakers' privacy concerns. The state's newest attempt, S1651-2015, was introduced in January and is awaiting action in the Senate Investigations and Government Operations Committee.<sup>17</sup>

### **Domain name**

It would be essential to maximize ease of access to open data during the implementation of state policy. California lawmakers would do well to update or re-create the data.ca.gov domain, as it has name recognition and considerable back-end government support.

In contrast, Florida chose a different domain strategy. Rather than a simple and standardized URL for its budget transparency site—data.fl.gov, for example—that state's government registered its site at <http://www.floridahasarighttoknow.com/>. This ambiguous Web address has the potential to reduce user accessibility.

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16. Milken Institute, "State Tech and Science Index," November 2014, <http://statetechandscience.org/state-tech-and-science-report-2014.pdf>" (accessed January 6, 2015).

17. <http://open.nysenate.gov/legislation/bill/S1651-2015>.

## Open data in California

Currently, there are already several open-data portals in California. The State Controller’s Office also publishes city and county expenditure figures. And the state’s primary open-data hub, data.ca.gov, serves as a guide to each individual portal. But the state still has work to do if this website is realize its full potential and serve as a centralized database for the discovery and visualization of open data published by the government.

The Center for Data Innovation assigned each state an open-data score in four subcategories. California ranked 11<sup>th</sup> overall, with its worst showing in categories related to a statewide open-data policy.<sup>18</sup>

**Table 2. State open-data scores**

| State             | Policy   | Policy quality | Portal   | Portal quality | Total score |
|-------------------|----------|----------------|----------|----------------|-------------|
| Hawaii            | 2        | 3              | 2        | 1              | 8           |
| Illinois          | 2        | 3              | 2        | 1              | 8           |
| Maryland          | 2        | 3              | 2        | 1              | 8           |
| New York          | 2        | 3              | 2        | 1              | 8           |
| Oklahoma          | 2        | 3              | 2        | 1              | 8           |
| Utah              | 2        | 3              | 2        | 1              | 8           |
| Connecticut       | 2        | 2              | 2        | 1              | 7           |
| Texas             | 2        | 2              | 2        | 1              | 7           |
| New Hampshire     | 2        | 3              | 1        | 0              | 6           |
| Rhode Island      | 2        | 1              | 2        | 1              | 6           |
| <b>California</b> | <b>1</b> | <b>0</b>       | <b>2</b> | <b>1</b>       | <b>4</b>    |

Source: Center for Data Innovation

California is the highest-ranked state on this list without a statewide policy. A policy at this level with even a moderate amount of success would likely push the state into the top tier of these rankings.

Several cities in California have already launched data portals. These include many that ranked highly in the Milken Institute’s 2014 Best-Performing Cities national ranking.<sup>19</sup> San Francisco (first), San Jose (fourth), and San Diego (22<sup>nd</sup>) all have open-data portals. And while local and county governments likely would not be legally required to adhere to the policy for state agencies, they should be encouraged to participate. The state policy could also serve as a guide for cities that open portals in the future.

18. Center for Data Innovation, “State Open Data Policies and Portals,” August 2014, <http://www.datainnovation.org/2014/08/state-open-data-policies-and-portals/> (accessed February 3, 2015).

19. Milken Institute, “Best-Performing Cities,” January 2015, <http://assets1b.milkeninstitute.org/assets/Publication/ResearchReport/PDF/Milken-Institute-Best-Performing-Cities-Index-2014.pdf> (accessed January 21, 2015).

## Conclusion

By developing and implementing a statewide open-data policy, California can ensure that future portals adhere to unifying standards and are maintained in a way that is most beneficial to the state's residents and government agencies. Based on an examination of best practices in other states, we recommend that any state-level open-data policy contain these elements:

**Standardized data.** Only searchable file formats, including CSV and JSON, should be used when uploading data sets. PDFs, image files, and other non-searchable formats should never be used.

**Front- and back-end usability.** Emphasis must be placed on ease of use for both front-end and back-end users. Processes should be designed in such a way that allows agency employees to easily upload, categorize, and tag data sets. Socrata employs several best practices to provide government stakeholders with straightforward methods of achieving this.

**Guidelines for administration of the policy.** The creation of a chief data officer (CDO) or similar position at the cabinet level is strongly recommended to oversee implementation and administration of the policy. The CDO should also act as a liaison between agency officials, stakeholders, and local government policymakers to maximize the efficiency and effectiveness of the policy.

**Mandatory regular updates of published data.** The importance of regular updates and maintenance of data sets cannot be overstated. Data portals must always include the most accurate and up-to-date information available.

**Respect for privacy and security concerns.** Efforts must be made to ensure the protection of sensitive documents that may expose information related to the privacy and safety of citizens. This is especially important when publishing health records.

By combining all government data sets into a single searchable database, the government can maximize ease of use to stakeholders and offer the best possible tool to leverage new opportunities in transparency, efficiency, and economic development.

As the boundaries of technological advances continue to be pushed in innovation hubs like Silicon Valley, governments must create an environment for businesses to thrive by making new tools and ideas available for private use. By recognizing the importance of open data and working to make the most of its potential benefits, California can clear the path for innovative entrepreneurship.

## About the authors

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Jason Barrett is a public policy analyst at the Milken Institute. He is interested in monitoring recent political activity in Sacramento and Washington, D.C., and analyzing its effect on economic, financial, and regulatory policies. Barrett seeks to provide decision-makers and Institute stakeholders with key information regarding relevant legislation and policies at the city, state, and national levels. Recent projects include examining good government policies in local and state governments and identifying practices that may assist California cities in improving their competitiveness in attracting businesses.

Previously, Barrett worked for Congressional Quarterly, a group dedicated to summarizing and providing analysis of the latest legislative activity in Washington, D.C. He also worked in the Capitol Hill office of U.S. Senator Bill Nelson. Barrett received a bachelor's degree in corporate communications and political science from Elon University and a master's degree in legislative affairs from George Washington University.

### Kevin Klowden

Kevin Klowden is managing director of the Milken Institute's California Center and a managing economist at the Institute. He specializes in the study of demographic and spatial factors (the distribution of resources, business locations, and movement of labor) and how these are influenced by public policy and in turn affect regional economies. His key areas of focus include technology-based development, infrastructure, the global economy, media, and entertainment.

Klowden was the lead author of "Strategies for Expanding California's Exports," which focused on the vital role trade and exports play in the state economy and its underperformance relative to the country over the past decade. He has also written on the role of transportation infrastructure in economic growth and job creation in reports such as "California's Highway Infrastructure: Traffic's Looming Cost" and "Jobs for America: Investments and Policies for Economic Growth and Competitiveness," as well as in publications including The Wall Street Journal.

He has addressed the role of technology-based development in publications such as the "2014 State Technology and Science Index," "North America's High-Tech Economy," and location-specific studies on Arkansas and Arizona. In addition, Klowden was the lead author of several studies on the economics of the entertainment industry, including "A Hollywood Exit: What California Must Do to Remain Competitive in Entertainment—and Keep Jobs," "Fighting Production Flight: Improving California's Filmed Entertainment Tax Credit Program," "Film Flight: Lost Production and Its Economic Impact in California," and "The Writers' Strike of 2007-2008: The Economic Impact of Digital Distribution," each of which analyzes the changing dynamics of the entertainment industry.

Additionally, he coordinated the Milken Institute's two-year Los Angeles Economy Project, seeking public-policy and private-sector solutions to challenges the region faces amid a growing unskilled labor pool. Klowden is a frequent speaker on state fiscal issues and has served on multiple advisory boards on business growth, economic development, and infrastructure. He holds graduate degrees from the University of Chicago and London School of Economics.



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